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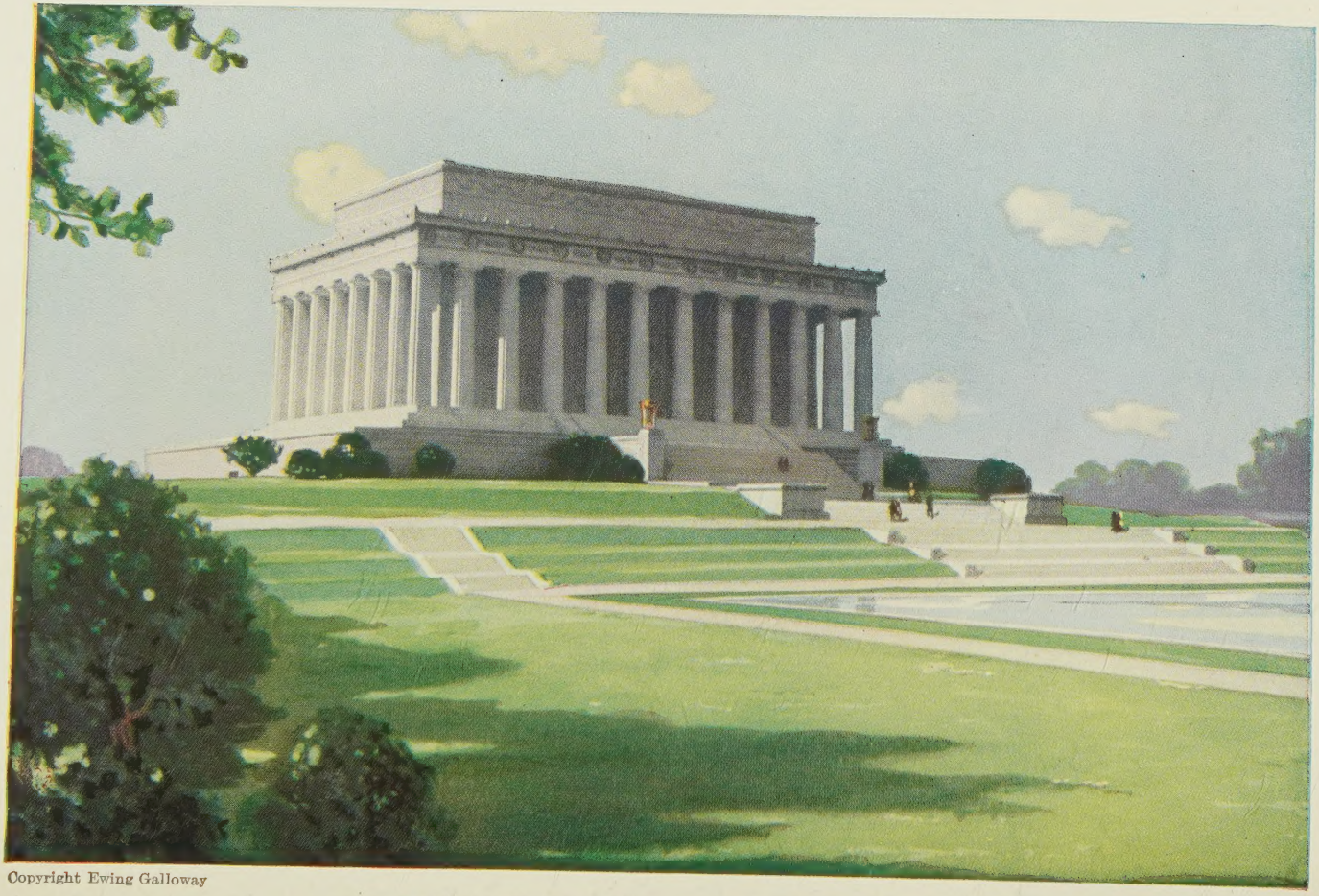

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THE LINCOLN MEMORIAL AT WASHINGTON

COLLIER'S

NEW

ENCYCLOPEDIA

A LOOSE-LEAF AND SELF-REVISING
REFERENCE WORK

IN TEN VOLUMES WITH 515 ILLUSTRATIONS
AND NINETY-SIX MAPS

VOLUME FIVE

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"HERRICK—LOM"

HERRICK, MYRON T., an American public official, born at Huntington, O., in 1855. He studied at Oberlin College and the Ohio Wesleyan University. After studying law he was admitted to the bar and practiced at Cleveland from 1878 to 1886. He took an active interest in politics and was a member of State and National committees. In 1903 he was elected Governor of Ohio.

MYRON T. HERRICK

From 1912 to 1914 he was ambassador to France. He rendered valuable service at the outbreak of the war and after his retirement as ambassador was largely engaged in war work in the United States and Europe. He had many financial interests.

HERRICK, ROBERT, an English lyric poet; born in London, England, Aug. 20, 1591; studied at Cambridge University; studied law at Trinity Hall; accepted the living of Dean Prior, Devonshire, in 1629, but was rejected in 1647 for adherence to the Royalist side, being restored, however, in 1662. He wrote "Hesperides" (1648). A number of his shorter songs, *e. g.*, "Gather ye rosebuds while ye may"; "Cherry Ripe," etc., have been set to music. He died in Dean Prior, Devonshire, England, in October, 1674.

HERRICK, ROBERT, an American novelist and poet, born in Cambridge, Mass., in 1868; was graduated at Harvard in 1890; and in 1895 became Assistant Professor of Rhetoric at the University of Chicago. Among his first books are: "The Web of Life"; "The Man Who Wins"; "Love's Dilemmas"; etc. His later works include "Together" (1908); "The Healer" (1911); "Clark's Field" (1914); "The Conscript Mother" (1916).

HERRICK, MRS. SOPHIE McILVAINE (BLEDSOE), an American editor and microscopist, daughter of Albert T. Bledsoe; born in Gambier, O., March 26, 1837. She became editor of the "Southern Review" in 1875, and afterward joined the editorial staff of "Scribner's Monthly." She wrote "Wonders of Plant Life under the Microscope" (1833); "The Earth in Past Ages"; etc.

HERRIG, HANS, a German Poet, dramatist, and editor; born in Brunswick, Dec. 10, 1845. He abandoned law for literature and journalism, joining the staff of the "Deutsches Tageblatt" when it started. His plays were numerous and successful, notably "Alexander the Great"; "Jerusalem"; "Nero"; and others serious in subject. His greatest success was with the "church play" arranged and written for the Luther Jubilee of 1833, and widely performed. His poetry includes both the light and serious, "The Fat King" among the former and "The Swine" among the latter. He died in Weimar, May 4, 1892.

HERRIN, a city of Illinois in Williamson co., on the Chicago, Burlington and Quincy, the Illinois Central, and the St. Louis, Iron Mountain and Southern railroads. It is the center of an important coal mining region and has industries which include machine shops, a foundry, and a powder plant. Pop. (1910) 6,861; (1920) 10,986.

HERRING, a well-known fish, *Clupea harengus*. The head is one-fifth its total length; there are small teeth in both jaws; the suboperculum is rounded; the ventral fins begin under the middle of the dorsal; the anal has 16 rays. Upper parts blue or green, lower ones silvery-white. Length 10 or 12 inches. Food, the eggs of fishes, small crabs, and worms. The herring is of immense economic value. The S. limit of the species seems about 45° N. lat.

HERRNHUT (hern'höt), a town in the kingdom of Saxony, 18 miles S. E. of Bautzen; celebrated as a chief seat of the MORAVIANS (*q. v.*) or Herrnhuters, who settled here in 1722.

HERSCHEL, SIR JOHN FREDERICK WILLIAM, an English astronomer and physicist; only son of Sir William Herschel; born in Slough, near Windsor, England, March 7, 1792. In 1813 he graduated at Cambridge. He spent eight years reviewing the nebulæ and clusters of stars discovered by his father. The results were given in 1833 to the Royal Society in the form of a catalogue of stars. In 1830 he produced his excellent "Preliminary Discourse on the Study of Natural Philosophy." In 1834 he established, at his own expense, an observatory at Feldhuysen, near Cape Town, Africa. He returned to England in 1838 and in 1847 published "Results of Astronomical Observations made during 1834-1838 at the Cape of Good Hope, being the Completion of a Telescopic Survey of the Whole Surface of the Visible Heavens." He was one of the earliest pioneers in photography; and on the queen's coronation he was created a baronet. Among his other works are "Outlines of Astronomy," "Familiar Lectures on Scientific Subjects," and a translation of the Iliad in verse. He died May 11, 1871.

HERSCHEL, SIR WILLIAM, an English astronomer; born in Hanover, Prussia, Nov. 15, 1738. The son of a musician, he went to England in 1757, and was employed in the formation of a military band. He had for some time devoted his leisure hours to the study of mathematics and astronomy; and, being dissatisfied with the only telescopes within his reach, he set about constructing instruments for himself. Late in 1779 he began a regular survey of the heavens, star by star, with a 7-foot reflector, and discovered, March 13, 1781, a new primary planet, named by him the GEORGIUM SIDUS. This discovery extended his fame throughout the world and brought him a pension of £200. He then took up his residence at Datchet, near Windsor, where he made many discoveries in double and triple stars, on the proper motion of the sun and solar system, the spots at the pole of Mars, and the nebulæ and cluster of stars observed by Messier and Mechain. In 1787, he discovered a 2d and 4th satellite of the Georgium Sidus, and in 1790 and 1799, five other satellites, viz., the 1st, 3d, 5th, and 6th. In 1781, George III. defrayed the expense of a 40-foot telescope. With this magnificent instrument Herschel discovered the 6th and 7th satellites, and also the spots, belts, and flattening on the four new planets between Mars and Jupiter. We owe to him also the discovery of invisible heating rays beyond the red extremity of the spectrum. In 1820 he was elected the first President of the Royal Astronomical Society, and published in the first volume of its "Transactions" a paper on 145 new double stars. He died in Slough, near Windsor, England, Aug. 25, 1822.

HERSCHELIAN RAYS, non-luminous rays outside the red of the solar spectrum; they were first discovered by Sir William Herschel.

HERSCHELITE (named after Sir John Herschel), an orthorhombic, colorless or white translucent mineral of somewhat vitreous luster optically biaxial. Found at Acireale in Sicily.

HERSTAL, or **HERISTAL**, a city of Belgium in the province of Liège. It is on the left bank of the Meuse river. It is an important iron and steel center and has munition works, manufactures of bicycles, etc. In the vicinity are important coal mines. Pop. about 23,000.

HERTER, ALBERT, an American artist, born in New York City in 1871. He studied in New York and in Paris, received honorable mention in the Paris Salon in 1890 and several medals and prizes for excellency in painting. He was especially eminent as a mural painter and was a member of many art and architectural societies.

HERTFORD, the county town of Hertfordshire, England, 26 miles N. of London; on the Lea river. It contains few buildings of any architectural importance, save one ancient church; but there is a town hall (1768), and on London Road is a preparatory school in connection with Christ's Hospital, London. A considerable trade is carried on in corn, malt, and flour. Of the old castle of Hertford, commenced by Edward the Elder about 905 to protect the inhabitants from the incursions of the Danes, and strengthened by William the Conqueror, only a small portion now remains. Pop. (1918) 10,384.

HERTFORDSHIRE, a county of England, bounded on the E. by Essex, on the S. by Middlesex, on the W. by Buckingham and Bedford, and on the N. by Cambridge. It has an area of about 630 square miles. Agriculture is the chief industry. The capital is Hertford.

HERTHA, the goddess of Earth, worshiped by the ancient Germans. In astronomy, an asteroid, the 135th found. It was discovered by Peters, Feb. 18, 1874.

HERTLING, GEORG COUNT VON, German Chancellor from October, 1917, to September, 1918. Born at Darmstadt in 1843 and died in 1919. After studying at Münster, Munich, and Berlin, he became in 1882 professor of philosophy at Bonn University. He was the author of several works dealing with philosophy such as: "Matter and Form and Aristotle's Definition of the Soul"; "John Locke and the Cambridge School"; "The Principles of Catholicism and Science"; etc. He served in the Reichstag from 1875 to 1890 and again from 1896 to 1898. In 1912 he was made Bavarian Minister of Foreign Affairs and Prime Minister, a position he held until his appointment as Imperial Chancellor. In both of these offices he upheld the war policies of Germany and as Chancellor proved to be under the powerful influence of the General Staff of the Army. He did, however, attempt while Chancellor to bring about a reform in the methods of electing the Prussian Landtag which was intended to make that body more representative of the will of the people. These measures, however, were never enacted into law. His foreign policy was equally unsuccessful, though not similarly liberal. He refused to give any guarantee that Belgium would be evacuated by the Germans, nor did he attempt in any way to stop the excesses of the Imperial army and navy. While he was in office the Brest-Litovsk peace with Russia was negotiated, which clearly showed him to be in sympathy with the war aims of the Prussian Junkers. The defeats of the German army in France and Belgium in August and September, 1918, marked the defeat also of his policy and brought about his resignation.

HERTZ, JOSEPH HERMAN, chief rabbi of the United Hebrew congregations of the British Empire since 1913. He was born at Rebrin, Hungary, in 1872, and emigrated as child to New York, where he was educated. Rabbi at Syracuse, N. Y., till 1898, and at Johannesburg from 1898 till 1911. He was administrator of the Johannesburg Public Library, founder of the Jewish Board of Deputies for the Transvaal, and professor of philosophy at the Transvaal University College. He was rabbi of the Congregation Arach Chayim, New York, in 1912. His works include: "Ethical System of James Martineau"; "Bachya, Jewish Thomas à Kempis"; "The Jew in South Africa"; "Book of Jewish Thoughts," etc.

HERVÉ, GUSTAVE, a French Socialist, born near Brest in 1871. He was for many years professor of history at Sens, but the publication of anti-militarist articles in 1901 brought about his dismissal. He was imprisoned in 1905 and several times thereafter for opposing compulsory military service. Public opinion, however, brought about his release. He published a paper called "La Guerre Sociale" in which he voiced his anti-national views. He encouraged strikes among workmen and upheld sabotage; also wrote several books attacking organized government; and was probably the most radical and outspoken of French Socialists. However, when France was drawn into the war in 1914, he heartily supported the Government.

HERVEY, JAMES, an English author; born in Hardingstone, near Northampton, England, Feb. 26, 1714. He was educated at Oxford, and then took orders. The best of his works were "Meditations and Contemplations" (1746), including his most famous production, "Meditations among the Tombs." He died Dec. 25, 1758.

HERVEY, WALTER LOWRIE, an American educator born at Mount Vernon, O., in 1862. He graduated from Princeton University in 1886. For several years he taught Latin and Greek in secondary schools and became professor of history and institutes of education at Teachers College, New York, and was dean of the faculty of this institution from 1889 to 1891. In 1891 and 1892 he was acting president and president from 1892 to 1897. He filled several responsible positions in the educational system of New York, and wrote much on educational subjects, including "Picture Work" (1896); "Daily Lesson Plans" (1912); and "Introductory Second Reader" (1914).

HERVEY ARCHIPELAGO. See COOK ISLANDS.

HERZEGOVINA (hert-se-gō-vē'-nä), or **HERSEK** (her'sek), a former province of the Ottoman Empire, nominally forming (with the exception of Castelnuova, and some adjoining districts) a part of the *eyalet* or pashalic of Bosnia; bounded N. by Bosnia, S. by Montenegro, E. by Bosnia, and W. by Dalmatia; area 3,616 square miles; pop. about 300.000. Capital, Mostar; pop. about 20,000. Its political and ethnographical characters coincide with those of Bosnia, though it differs in physical character. Herzegovina was occupied in 1878 under the Berlin treaty, and the government was administered by Austria-Hungary until October, 1908, when the dual monarchy

extended full sovereignty over Bosnia and Herzegovina. The Powers were forced to acquiesce in the repudiation of the Berlin treaty, Serbia protesting. With the break up of the Austro-Hungarian Empire following the European War of 1914–1918, Herzegovina, by the Peace Treaty of 1919, becomes a province of Jugoslavia.

HERZL, THEODOR, founder of the Zionist movement, born in Budapest in 1860. He studied law, engaged in literary work and was literary editor of the Vienna "Neue Freie Presse." In 1896 he published "Der Judenstaat," which advocated the establishment of a self-governing Jewish state in Palestine. He soon became the leader of the Zionist movement which was heartily supported throughout the world. Until his death in 1904 he devoted his time and energy in furthering this movement which became a reality in 1920.

HESHBON, a celebrated city of the Amorites, 20 miles E. of the mouth of the Jordan (Josh. ix:10; xiii:17). Its ruins are now called Hesban, and cover the sides of a hill 7 miles N. of Medeba.

HESIOD (hē'si-od), one of the earliest Greek poets; born in Ascra, Bœotia, and usually supposed to have lived in the 8th century B. C. A family dispute drove him from Ascra, and he settled at Orchomenos. The works attributed to him are the poems entitled, "Works and Days," "Theogony," "Shield of Hercules," and the lost "Catalogue of Women." "Theogony" is an attempt to present a systematic view of the origin and powers of the gods, and of the order of nature. It is of great importance for the history of the religion of the Greeks.

HESPERETIC ACID, in chemistry, $C_{10}H_{10}O_4$, obtained by the action of alkalis on hesperidin. It melts at 225°. Fused with caustic potash, it is decomposed into acetic and protocatechuic acids, hydrogen being liberated.

HESPERETIN (-per'e-tin), in chemistry, $C_6H_5O_2{\cdot}C_{10}H_9O_3$. It is obtained along with glucose by the action of dilute acids on hesperidin. It is recrystallized from ether; the crystals are white, and melt at 223°. Hesperetin is really insoluble in alcohol. Heated to 100° with caustic potash, it yields hesperetic acid and phloro-glucin.

HESPERIA (-pē'ri-ä), in astronomy, an asteroid, the 69th found; discovered by Schiaparelli, April 29, 1861. In entomology, the typical genus of the family *Hesperidæ*. The species fly with extreme rapidity.

HESPERIDES (-per'i-dēz), in Greek mythology the name of the famous sisters (Ægle, Erythia, Hestia, Arethusa) who, assisted by the dragon Ladon, guarded the golden apples which Hera had received, on her marriage with Zeus, from Ge. With the assistance of Atlas the apples were stolen by Hercules, who killed the dragon.

HESPERIDIN, or **HESPERIDINE**, in chemistry, $C_{22}H_{26}O_{12}$, a glucoside extracted from dry, unripe bitter oranges.

HESPERUS (hes'pe-rus), the Greek name for Venus as the evening star. Hence the Alexandrian grammarians called Italy, and sometimes all western Europe, Hesperia, "The Western land."

HESSE (hes), or **HESSEN** (hes'sen), anciently a territory of Germany; mainly between the Neckar, Rhine, Main, Lahn, and Fulda rivers. After various fortunes it was ruled by the landgrave Philip I., who succeeded in 1509, and at his death in 1567 divided his dominions among his four sons. The death of two of these, however, reunited the territories in part, so that there remained only the two main divisions of Hesse-Cassel and Hesse-Darmstadt, the latter now known simply as Hesse.

HESSE, or HESSEN, GRAND DUCHY OF, formerly known as Hessen-Darmstadt, an independent state of south Germany, consisting of sundry distinct portions; area, 2,966 square miles; pop. about 1,350,000. Of the two main portions, one (forming the provinces of Rheinhessen on the left, and Starkenburg on the right bank of the Rhine) lies immediately to the N. of Baden, the other, Oberhessen (Upper Hesse), is entirely inclosed by the Prussian province of Hessen-Nassau. Much of the soil, particularly in the provinces of Starkenburg and Rheinhessen, is remarkably fertile. The vine forms a most important object of culture, and fruit is very abundant. Principal towns, Darmstadt, the capital (pop. about 88,000); Mainz, Giessen, Bingen, and Worms. About two-thirds of the inhabitants are Protestants.

The grand-duchy of Hesse originated in the division of the landgraviate of Hesse in 1567 (see HESSE). In 1806 the landgraviate was erected by Napoleon into a grand-duchy with an enlarged territory. It was reduced to its present limits in 1866, as the result of the Austro-Prussian War in which Hessen was on the side of Austria. In 1871 Hessen became part of the German Empire. In the fall of 1918 the then reigning grand-duke, Ernst Ludwig, was,

together with all the other German rulers, dethroned and Hessen became a republic.

HESSE-CASSEL (hes'kas'el), till 1866 a German electorate, since then forming the government district of Cassel in the Prussian province of HESSE-NASSAU (*q. v.*); area, 3,700 square miles. The landgraviate of Hesse-Cassel was formed by William IV., eldest son of Philip the Magnanimous, who died in 1567. Constituted an electorate in 1803, it was occupied by the French in 1806, incorporated with Westphalia in 1807, and reconstituted an electorate in 1813. The elector having joined Austria in 1866, Hesse-Cassel was incorporated with Prussia, as part of the province of Hesse-Nassau.

HESSE-HOMBURG (hes'hom-burg), a former landgraviate of Germany; consisted of the provinces of Homburg and Meisenheim. The male line of Hesse-Homburg became extinct by the death of the landgrave Ferdinand, March 24, 1866; the state was incorporated with Hesse-Darmstadt, but later that year was ceded to Prussia and since then forms part of Prussian Hesse-Nassau.

HESSE-NASSAU (hes'nas'sâ), a province of Prussia, incorporated by decree of Dec. 7, 1868, by the union of the province of Upper Hesse (formerly a portion of the grand-duchy of Hesse) with the former duchy of Nassau; area, 6,060 square miles; pop. about 2,500,000. The most important city of the province is FRANKFORT-ON-THE-MAIN (*q. v.*). The province is also known throughout the world for its numerous mineral springs and health resorts, among which the most important are Homburg, Wiesbaden, Ems, and Selters. Its mineral deposits, especially iron ore and coal, are important.

HESSIAN FLY (*Cecidomyia destructor*), a fly of the family *Tipulidæ*, of the order *Diptera* (two-winged flies), the larva of which is very destructive to wheat, barley, and rye crops (it does not attack oats). It is so named from the belief that it was brought over to America by the Hessian mercenaries during the Revolutionary War. The female flies usually lay their eggs on the young plants twice in the year, in May and September, out of which eggs the maggots hatch in from 4 to 14 days. It has long been a pest in the United States and Germany, but did not appear in Great Britain till the summer of 1886.

HESSITE, an orthorhombic gray sectile mineral of metallic luster. Hardness, 2–3.5; sp. gr. 8.3–8.6. Composition: Tellurium, 37.2; silver, 62.8 = 100. Found in the Altai Mountains in a talcose rock, also in Transylvania and Hungary.

HETEROCERCAL, a term introduced by Agassiz to designate the unsymmetrical tail of elasmobranch and most ganoid fishes, in which the vertebral axis is bent upward in the tail, making the upper lobe much the larger.

HETEROPODA (-op'ō-dä), an order of marine mollusks, the most highly organized of the *Gasteropoda*. In this order the foot is compressed into a vertical muscular lamina, serving for a fin, and the gills, when present, are collected into a mass on the hinder part of the back. The chief genera are *Carinaria* and *Firola*.

HETMAN, or **ATAMAN**, the title of the head (general) of the Cossacks.

HEULANDITE, a monoclinic, transparent or translucent brittle mineral, of pearly luster, and white, red, gray, or brown color.

HEWES, JOSEPH, a signer of the Declaration of Independence, born at Kingston, N. J., in 1730. In 1763 he moved to Edenton, N. C., and in 1774 was elected to the Continental Congress, of which he was a member until his death in 1779.

HEWITT, ABRAM STEVENS, an American statesman; born in Haverstraw, N. Y., July 31, 1822. He was graduated at Columbia College; was commissioner to the French Exposition of 1867; member of Congress 1875–1879 and 1881–1886; mayor of New York 1887–1888; secretary of the Cooper Union, New York. He was a high authority on all questions relating to iron. He died in New York City, Jan. 18, 1903.

HEWITT, PETER COOPER, an American engineer and inventor, born in New York City in 1861, the son of Abram S. Hewitt and the grandson of Peter Cooper. In his early manhood he became eminent as a scientist and was chosen director of the Cooper-Hewitt Electric Co. and other corporations. He was the inventor of the Cooper-Hewitt Mercury Vapor Electric Lamp, the Cooper-Hewitt Mercury Vapor Rectifier and many other important inventions relating to electricity, and also made important discoveries in relation to wireless electricity. He was a member of many scientific societies and received honorary degrees from Columbia University and Rutgers College.

HEWLETT, MAURICE HENRY, an English novelist and poet; born in London, Jan. 22, 1861. Educated at London International College, and admitted to the bar in 1891. From 1896 to 1900 he served as Keeper of Land Revenue Records and Enrolments, a post which his father Henry Gay Hewlett had filled before him. He first gained international reputation with a brilliant medieval romance, "The Forest Lovers" (1898), and followed that with several other tales of olden times notable for creative imagination and rare beauty of style. His books include: "Songs and Meditations," poems (1896); "The For-

MAURICE H. HEWLETT

est Lovers" (1898); "Pan and the Young Shepherd" (1898); "Little Novels of Italy" (1899); "Richard Yea-and-Nay" (1900); "New Canterbury Tales" (1901); "The Queen's Quair" (1904); "The Road in Tuscany" (1904); "Fond Adventures" and "The Fool Errant" (1905); "The Stooping Lady" (1907); "The Spanish Jade" and "Halfway House" (1908); "Open Country" (1909); "Rest Harrow" (1910); "The Agonists" (1911); "Mrs. Lancelot" (1912); "Bendish" (1913); "A Lovers' Tale" (1915); "The Little Iliad" (1915); "The Song of the Plow" (1916); "Peridore and Paravail" (1917); etc.

HEXACHORD, in ancient music, an interval of four tones and one semitone, equivalent to that which the moderns call a sixth.

HEXAGONAL SYSTEM, in crystallography and mineralogy, one of the six great systems of crystallization. It agrees with the tetragonal system in having only the lateral axes equal, but differs in having three equal lateral axes instead of two. The vertical is at right angles to the lateral one. The symmetry of the crystals is by sixes and twelves.

HEXAHEDRON, a figure having six faces, or a solid bounded by six planes. The term cube is now generally applied to the regular hexahedron.

HEXAMETER (-am'e-tur), the heroic verse of the Greeks and Romans. As its name implies, it consists of six feet, properly dactyls, the last of which is shortened by one syllable, and so becomes a trochee, or, as the final syllable is long by position, a spondee.

HEXANE, in chemistry, C_6H_{14}, five isomeric hydrocarbons exist. (1) Normal hexane. Dipropyl, $CH_3{\cdot}CH_2{\cdot}CH_2{\cdot}CH_2{\cdot}CH_2{\cdot}CH_3$. It occurs in the light oils obtained by the distillation of cannel coal, also in petroleum. It can be obtained by the action of sodium and normal propyl iodide, C_3H_7I, or by the action of zinc and hydrochloric acid on secondary hexyl iodide (from mannite), and by distilling suberic acid with baryta, $CgH_{14}O_4 + 2BaO = 2BaCO_3 + C_6H_{14}$. It boils at 71°. (2) Propyl dimethyl methane, or propyl isopropyl, ethyl isobutyl, obtained by the action of sodium on a mixture of ethyl iodide and isobutyl iodide.

HEXHAM, a town of England, in Northumberlandshire, on the Tyne, about 20 miles W. from Newcastle. It has ruins of an abbey church, originally a cruciform structure, built about 674, destroyed two centuries later by the Danes, renovated in 1113, and demolished by the Scots in 1296. THE BATTLE OF HEXHAM, fought May 15, 1464, was one of those belonging to the Wars of the Roses. Pop. about 9,000.

HEXOIC (hō'ik), in chemistry, $C_5H_{11}{\cdot}CO{\cdot}OH$, fatty acids of the acetic series, containing six carbon atoms. Eight of these acids are possible.

HEXYL ALCOHOLS, in chemistry, monatomic alcohols having the formula $C_6H_{13}(OH)$. Seventeen alcohols can exist, eight primary, six secondary, and three tertiary. Normal hexyl-alcohol, $(CH_3{\cdot}(CH_2)_4{\cdot}CH_2{\cdot}OH$. It is obtained from the essential oil of *Heracleum giganteum,* where it exists as hexyl-butyrate, along with octyl-acetic; the oil is saponified by alcoholic potash, and then fractionally distilled. The hexyl-alcohol boils at 157°.

HEXYL IODIDE, in chemistry, $C_6H_{13}I$, a secondary hexyl-iodide, is obtained by treating mannite with strong hydriodic acid.

HEYBURN, WELDON BRINTON, United States Senator from Idaho, born in Delaware co., Pa., in 1852. He received an academic education and was admitted to the bar in 1876. After practicing law in Pennsylvania he moved to Idaho and soon after entered politics. He was defeated for Congress in 1898 but in 1903 was elected to the Senate. He was re-elected in 1909. During his service he was chairman of the committee on manufactures and of the joint committee on the revision of the laws of the United States. He died in 1912.

HEYSE, JOHANN LUDWIG PAUL VON (hī'ze), a German poet and novelist; born in Berlin, March 15, 1830. At 24 he became noted for the purity and elegance of his elegiac verses. He wrote "Francesca da Rimini," a tragedy. "The Sabines" won the prize offered by the King of Bavaria in 1857. Among his more noted plays are "Mary of Magdala," which had considerable success in the United States; "Hans Lange" (1866); "Weltuntergang" (1889); "Wahrheit" (1892). Of his later novels "Uber Allen Gipfeln" (1895) had the largest circulation. He published also "The Brothers," "Rafael," and other volumes of poetry. His greatest reputation was gained by his short stories, of which he wrote about 165. Many of these are masterpieces. His best known single short story is "L'Arrabbiata," the best collection "Das Buch der Freundschaft." In 1911 he was awarded the Nobel prize for literature. He died in 1914.

HEYWARD, THOMAS, JR., an American jurist and signer of the Declaration of Independence. He was born in South Carolina in 1746. From 1775 to 1778 he was a member of the Continental Congress. In 1780 he was elevated to the Bench of his native State. During the Revolutionary War he served as captain of artillery. He died in 1809.

HEYWOOD, a town of England in Lancashire. It is about ten miles N. of Manchester. It is an important industrial center, having manufactures of cotton, iron, brass, locomotives, and chemicals. There are extensive coal mines in the neighborhood. Pop. about 27,000.

HEYWOOD, THOMAS, an English dramatist; born in Lincolnshire, England. He lived in the reigns of Elizabeth, James I., and Charles I., and was educated at Cambridge. He composed wholly or in part 220 different plays. Of these only about 24 remain, of which the one most admired is "A Woman Killed with Kindness," published in Dodsley's collection. He was also the author of "Great Britain's Troy," "An Apology for Actors," etc. He died about 1650.

HEZEKIAH, a pious King of Judah. He succeeded his father Ahaz about 726 B. C. His history is contained in II Kings 18–20; II Chr. 29–32. He was succeeded by the unworthy Manasseh. He died about 698 B. C.

HIAWATHA (hī-a-wâ'tha), an Indian legendary hero and peacemaker known by this name among the Iroquois and by other titles among the other tribes of North America. He is mentioned in various works on the aborigines, and in 1855 was immortalized in the beautiful poem, "Hiawatha," by Longfellow. In this he is made to appear as an Ojibway chief.

HIBBEN, JOHN GRIER, president of Princeton University. Born in Peoria, Ill., in 1861; was graduated from Princeton in 1882 (Ph. D., 1893). After studying in Berlin and at the Princeton Theological Seminary he was admitted to the Presbyterian ministry in 1887 and was in the pastorate for four years. In 1891 he was an instructor in Princeton University and professor of philosophy from 1897 to 1912, when he was

JOHN GRIER HIBBEN

chosen president. He is the author of several works on logic and general philosophy.

HIBBERT LECTURES, an English foundation instituted by the trustees of Robert Hibbert (1770–1849), a West India merchant, for the discussion of problems in religion or theology. Among the lecturers have been Max Müller, Page Renouf, Renan, Rhys Davids, Kuenon, Beard, Réville, Pfleiderer, Rhys, Sayce, Hatch, Montefiore, Drummond, and others. The lectures are published. The foundation also supports in part the "Hibbert Journal."

HIBBING, a city in Minnesota, in St. Louis co. It is on the Missabe and Northern, and the Great Northern railroads. Situated in the Mesaba iron ore range, the most productive iron mining region in the United States, it has steadily grown in industrial importance. There are five important mines within the city limits. Pop. (1910) 8,832; (1920) 15,089.

HIBERNATION, in zoölogy, that peculiar condition of sleep in which certain animals, chiefly cheiroptera and rodentia, pass the winter season. The bat, the hedgehog, and the dormouse are the most striking examples of this phenomenon.

During dormancy the animal functions are all but suspended. Respiration and circulation are reduced to a minimum. The air of a closed jar containing a hibernating dormouse is unaltered. Others can survive long in an atmosphere deprived of oxygen. A bat in a lethargic condition has remained 16 minutes under the water. Hibernators lose weight, often to the extent of 30 and 40 per cent., in this respect resembling starving animals.

All reptiles and batrachia become torpid during cold weather, snakes passing the winter in tangled knots as if for warmth; if the viper is aroused at this season its venom is said to be inert. Alligators creep into holes in the river-banks, and frogs lie dormant in the mud at the bottom of ponds. Many fishes (carp, roach, chub, minnows, eels, the Mediterranean muræna, etc.) also retire into some deep recess, or into the mud, though their condition at this period is not that of the true hibernators. Their vitality only is lowered. In winter all land-snails hibernate by closing the mouths of their shells with a plate (the epiphragm), leaving only a little hole in the middle of it for breathing. Slugs also become torpid in holes in the ground, and the fresh-water mussels (Unio, Anodonta, Dreissena) bury themselves in the pond and river mud till the cold months are over. The torpidity of insects in the pupa and other stages is well known. Individuals belonging to the Vanessa group of butterflies which hibernate in the imago stage occasionally emerge during mild winter days. But hive-bees do not hibernate, food being necessary for their subsistence during the flowerless season.

HIBERNIA, the ancient name of Ireland, applied to it first by Julius Cæsar. Aristotle mentions this island by the name of Ierne; Pomponius Mela calls it Iverna; Ptolemy, Iuvernia.

HIBERNIANS, ANCIENT ORDER OF, an Irish society having for its object the safeguarding of religion and nationality. The society had its origin in an edict against the Catholic religion issued in 1562 by the Earl of Sussex, then lord-lieutenant of Ireland, prohibiting priests from sleeping in Dublin and ordering Catholics, under penalties, not to attend Catholic services. As a result Prince Ruadhri, of the house of O'Moore, founded "The Defenders," and through their assistance the priests said mass in the mountains. Following Catholic emancipation in 1829 the society was reorganized under its present name and extended to Scotland, the United States, and Canada. The society has actively supported the Gaelic movement and established a chair for Irish language and Irish literature at the Catholic University of America. In 1914 the order had a membership of over 250,000, including the ladies' auxiliary. In 1913 over $2,500,000 was disbursed for various purposes. In 1919 the order declared itself on the side of the Irish Republic, and set itself to work for its recognition by the United States.

HIBISCUS, in botany, the typical genus of the malvaceous tribe *Hibisceæ*. The involucel is of several leaves, calyx with five divisions, petals five, stamens forming a sheath which incloses the five-branched style. Fruit five-celled, many seeded. They are plants with large showy flowers, found chiefly, though not exclusively, in tropical countries. In the West Indies *H. arborea* furnishes tenacious fibers, which are made into whips. Those of *H. cannabinus* constitute the *sun* of India, used as a substitute for hemp. *H. syriacus* and *H. rosa sinensis* are ornamental; the astringent plants of the latter are used by the Chinese to blacken their eyebrows and the leather of their shoes. More than 100 species of the genus are known.

HICCOUGH (hik'up), or **HICCUP**, a series of sudden, rapid, and brief inspirations, followed by expiration accompanied by noise. It is generally caused by irritation of the stomach. It also accompanies certain fevers.

HICHBORN, PHILIP, an American naval officer, born in Charlestown, Mass., in 1839. He studied in the Boston public schools and for a time worked in the Boston Navy Yard, afterward becoming master shipwright of the Mare Island Navy Yard in 1862. In 1868 he entered the navy with the rank of lieutenant and served as assistant naval constructor till 1875, when he became full constructor. In 1879 he was sent to Europe to report on foreign dock yards. His researches on that subject resulted in a text book which became standard. He served on many important naval boards, in 1893 was made chief constructor of the navy, and had much to do with the creation of the American modern navy. He was retired in 1901 with the rank of rear-admiral. His published writings include "European Dockyards," "Standard Boats," and "Sheathed and Unsheathed Ships." He invented the Franklin life buoy and the Hichborn balanced turrets.

HICHENS, ROBERT SMYTHE, an English journalist and novelist; born in Speldhurst, Kent, England, Nov. 14, 1864. Though at the age of 17 he wrote a novel which was actually published, he seems to have been most bent on a musical career; but he wearied of music, and turned to journalism. In 1893 he visited Egypt for his health, and while there conceived the idea which materialized in the "Imaginative Man" (1895). He also wrote "The Green Carnation" (1894), "After Tomorrow," and "New Love" (1895); "The Folly of Eustace and Other Stories" (1896); "Flames" (1897); "Garden of Allah" (1905); "Call of the Blood" (1906); "Barbary Sheep" (1909); "The Way of Ambition" (1913); "In the Wilderness" (1917); etc.

HICKORY, in botany and commerce, the several species *Carya*, a genus of *Juglandaceæ*. *C. alba* is the shell-bark, scaly-bark, or shag-bark hickory, from the tendency of the bark to peel off in long, loose strips. Its wood is noted for its elasticity and toughness, growing in this country from South Carolina to New Hampshire. Other species of the genus are the mocker-nut, white-heart, or common hickory (*C. tomentosa*), the wood of which is excellent for mechanical purposes, or for burning, the bitter-nut or swamp hickory (*C. amara*), the pig-nut hickory, or hog-nut or broom hickory (*C. porcina*), the nutmeg hickory (*C. myristicæ formis*), etc. The hickory of New South Wales is *Eucalyptus sturatiana* and *E. resinifera*.

HICKS, ELIAS, an American clergyman; born in Hempstead, N. Y., March 19, 1748; began his ministry among the Quakers in 1775 and devoted himself untiringly to his work for over 50 years without any compensation. He was an active abolitionist and in company with others was instrumental in inducing the State of New York to pass an act which, on July 4, 1827, liberated all slaves within its borders. His doctrinal views, which were not acceptable to many Quakers, led to a disruption of the society, and a body adhering to his teachings was organized under the name of "Hicksites." His publications include "Observations on Slavery" (1811); "The Letters of Elias Hicks" (1834); etc. He died in Jericho, N. Y., Feb. 27, 1830.

HICKS-BEACH, MICHAEL, EDWARD, VISCOUNT ST. ALDWYN, an English statesman and financier, born in London in 1837. He was educated at Eton and at Christ Church, Oxford. In 1864 he was elected to Parliament and again in 1885, serving till 1906. From 1874 to 1878 he was Chief Secretary for Ireland, serving again in that capacity in 1886–1887. From 1878 to 1880 he was Secretary of State for the Colonies. He became Chancellor of the Exchequer under Lord Salisbury in 1885. He was at the same time leader of the House of Commons. This office he held for one year. From 1888 to 1892 he was president of the Board of Trade and was again appointed Chancellor of the Exchequer following the retirement of the Gladstone ministry. He held this post with great success until he resigned in 1902. He bitterly opposed the tariff policy of Joseph Chamberlain and founded the Unionist Free Food League. In 1905 he was made a viscount, and in 1908 was a member of the Ecclesiastical Commission. He died in 1916.

HIDALGO, a State of Mexico, the northern and northeastern portions of which are mountainous, being crossed by the east range of the Sierra Madre, whose highest elevation is over 10,000 feet. The southern and western parts of the State contain many fertile valleys. The agricultural products include cereals, sugar cane, tobacco, coffee, etc. Mining is an important industry. Silver, iron, lead, and zinc are produced. Coal and marble are also found there.

Pop. about 600,000. The capital is Pachuca.

HIDDENITE, a variety of Spodumene, discovered by W. E. Hidden in 1879 in North Carolina. Green or yellowish green in color; specific gravity, 3.19. When cut and polished, Hiddenite is used as a gem, and is sometimes known as the lithia emerald. Chemically it is a lithium aluminum silicate.

HIDES, the skins of animals, either raw or dressed; but the name is more commonly given to the undressed skins of the larger domestic animals, as oxen, horses, etc., the smaller being called skins. See LEATHER.

HIELMITE (hē-el'mīt), a black mineral of metallic luster and granular fracture. It is a stanno-tantalate of iron, uranium, and yttria, occurring in pegmatite near Falun, in Sweden.

HIERACIUM, the hawkweeds, a genus of plants, order *Asteraceæ*. They are perennial herbs, with leaves alternate, entire, or toothed; involucre more or less imbricated, ovoid, many-flowered; scales very unequal. *H. Canadense, H. venosum,* and *H. paniculatum* are American species. *H. murorum,* the golden-lungwort, or wall-hawkweed, is a native of Europe.

HIERAPOLIS (-rap'ō-lis), a city of Phrygia, near the junction of the rivers Lycus and Meander, celebrated for its warm springs, and its cave Plutonium, from which arose a mephitic vapor which was poisonous to all but the priests of Cybele. A Christian Church was early established here, and St. Paul mentions it (Col. iv:12, 13). The city is now desolate, but its ruins still exhibit many traces of its ancient splendor. Also a city of Syria, called Bambyce by the early natives, one of the chief seats of the worship of Astarte or Ashtoreth.

HIERARCHY, the name used to designate the whole sacred governing and ministering body in the Church, distributed according to its several gradations.

HIERO, or **HIERON I.**, King of Syracuse. He succeeded his brother Gelon in 478 B. C. The most important event of his reign was the naval victory gained by his fleet and that of the Cumani over the Etruscans in 474, which deprived the latter of their supremacy in the Tyrrhenian Sea. Though violent and rapacious, he was a lover of poetry, and the patron of Simonides, Æschylus, Bacchylides, and Pindar. Hiero died in Catana, Sicily, in 467 B. C.

HIERO II., King of Syracuse; born about 307 B. C. He was a son of Hierocles, a noble Syracusan, who claimed descent from the family of Gelon. He was chosen by the soldiers as general in 275 B. C., and recognized as king about 270. In 264 he made an alliance with the Carthaginians against Rome, and thus began the first Punic War. Being defeated by the Romans he made peace by the payment of tribute, and was ever after a faithful and useful ally to them. He died in 216 B. C.

HIEROCHLOA (-rok'lō-ä), the holy-grasses, a genus of plants, order *Gramineæ. H. borealis,* the Holy or Seneca grass, is a grass about a foot high, with a brownish glossy lax panicle. It is found in the N. of Europe, and in America from Virginia up to the Arctic regions. It has a sweet smell, and in Iceland is used for scenting apartments and clothes.

HIEROCLES (-er'ō-klēz), the name of several Greeks: (1) A professor of rhetoric at Alabanda, Caria. Lived in the 1st century before the Christian era. (2) A writer on the veterinary art, of whose work three chapters have been preserved. (3) A Stoic philosopher, who is said to have flourished about the time of Hadrian. (4) A writer of a work which, under the title of "Traveling Companion," gave a description of the provinces of the Eastern empire. He is supposed to have lived in the 6th century. (5) A persecutor of the Christians, who was president of Bithynia, and afterward governor of Alexandria. Lived in the 4th century. (6) An Alexandrine Neoplatonic philosopher; wrote seven books on Providence and Destiny, and a commentary on the Golden Verses of Pythagoras; the latter of which is extant, also fragments of the former. Lived in the 5th century.

HIEROGLYPHIC (-glif'ik), in ordinary language, written in characters difficult to decipher. Hieroglyphics or hierglyphs are representations of animals, plants, and other more or less material bodies, sculptured on Egyptian temples, obelisks, sarcophagi, etc., and designed for ideographic or other writings. Hieroglyphics are of two kinds: some are ideographs, others stand for syllables or for letters. They are not confined to Egypt; they exist in the adjacent lands and in Mexico.

HIERONYMITES (-on'i-mīz), or **JERONYMITES** (je-ron'-), hermits of St. Jerome (Hieronymus), an order of religious persons established in 1374, who wear a white habit, with a black

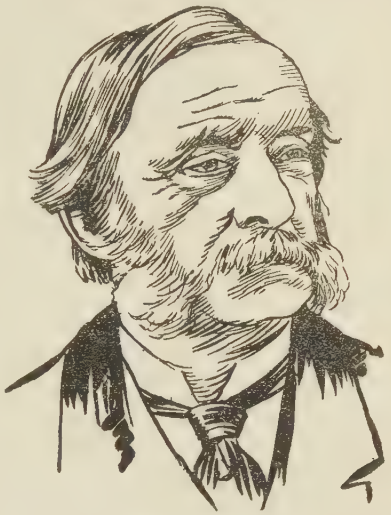
scapulary. They possessed the convent of St. Lawrence in the Escurial, and still have convents in Sicily, the West Indies, and South America.

HIGGINS, FRANK WAYLAND, an American public official, born in Rushford, N. Y., in 1865. He graduated from Riverview Military Academy; entered business in which he was very successful; and was elected to the State Senate in 1894, serving till 1902. In the following year he was appointed lieutenant-governor and was elected governor on the Republican ticket for the term 1905 to 1907. He died in the latter year.

HIGGINSON, FRANCIS JOHN, an American naval officer, born in Boston, Mass., in 1843. He graduated from the United States Naval Academy in 1861; became a lieutenant in the following year and rose to the various grades, becoming commodore in 1898. In the Civil War he served with the West Gulf Blockading Squadron and was wounded in this service. He took part in many important actions and at the close of the war he saw service on the sea and on shore. He commanded the Naval Training Station at Newport from 1887 to 1890; was captain of the Mare Island Navy Yard in 1894–1895; and on special duty at the New York Navy Yard in 1896 and 1897. During the war with Spain he commanded the battleship "Massachusetts" and was advanced three numbers in rank for conspicuous conduct in battle. From 1898 to 1901 he was chairman of the Lighthouse Board and from 1901 to 1903 commander-in-chief of the North Atlantic Fleet. His last service was as commandant in the Washington Navy Yard from 1903 to 1905. He retired from active service in the latter year.

HIGGINSON, HENRY LEE, an American financier and philanthropist, born in New York City in 1834. He studied at Harvard, but left to travel in Europe and to study music there. At the outbreak of the Civil War he enlisted to serve in the First Massachusetts Cavalry, and was brevetted lieutenant colonel. He entered the banking business in 1868 as a member of the firm of Lee, Higginson & Co. and acquired a large fortune. His chief interest was music and he maintained as long as he lived the Boston Symphony Orchestra, the most noted musical organization in the United States. He also gave largely to charity. His prominence in all fields of activity won for him the name of "Boston's first citizen" and honorary degrees from Harvard and Yale universities. He died in 1919.

HIGGINSON, THOMAS WENTWORTH, an American author; born in Cambridge, Mass., Dec. 22, 1823; was graduated at Harvard College in 1841. He entered the Unitarian ministry in 1847, but left in 1858, becoming active in anti-slavery agitation. During the Civil War he served first as captain and later as colonel. His publications include: "Woman and Her Wishes"; "Sympathy of Religions"; "Young Folks' History of the United States"; "Young Folks' Book of American Explorers"; "English History for Americans"; "Cheerful Yesterdays"; "Old Cambridge"; etc. He died May 9, 1911.



THOMAS WENTWORTH HIGGINSON

HIGHBINDERS, the name given by Americans to a secret organization known to exist among the Chinamen in North America, and which has caused considerable disturbance in the Chinese population of San Francisco, Cal. The Chinese call these societies *pro tan ocy* or "hatchet" societies, and the members "hatchet boys." The members claim to be Chinese Freemasons, but seem in reality to be lawless spirits unable to brook the discipline of the regular charitable societies, and who have consequently organized for mutual protection in crime.

HIGH CHURCH, one of the three great parties in the English Church. They regard the Episcopal form of government as so essential to a true church that, as a rule, they do not feel free to recognize, as sister churches, those Christian denominations which are under other forms of government. Dur-

ing the 19th century High-churchism developed first into Tractarianism and then into Ritualism. Believing the Church to have received the right of autonomy from its Divine Head, the High-church party disapprove the Royal Supremacy, and dispute the right of the civil courts to try ecclesiastical cases.

HIGH EXPLOSIVES. See EXPLOSIVES.

HIGH GERMAN, originally the Teutonic dialect spoken in the S. and elevated parts of Germany, as distinguished from Platt Deutsch or Low German, spoken in the N. and more lowland portions of Germany.

HIGHLAND PARK, a city of Michigan in Wayne co. Its chief industry is the manufacture of automobiles and motors. The development of this industry has greatly increased its industrial importance in recent years. Pop. (1910) 4,120; (1920) 46,499.

HIGHLANDS OF SCOTLAND, THE, a somewhat vague and indefinite geographical division of Scotland, N. and W. of a line running N. E. from Dumbarton on the Clyde through the counties of Dumbarton, Stirling, Perth, Forfar, Kincardine; then N. W. through Aberdeen, Banff, Moray, and Nairn to the shores of the Moray Firth. The Highlands are generally subdivided into two parts, the West Highlands and the North Highlands; the former of which contains the shires of Argyll and Bute, the Southern Hebrides, and part of Perth and Dumbarton; the latter comprehends the counties of Inverness, Ross, Sutherland, the districts of Athol, Rannoch, and the Isles of Skye, Lewis, and others belonging to Inverness and Ross. The mountainous parts of Banff, Moray, Aberdeen, and Kincardine are also recognized as forming part of the Highlands; while Caithness (partly) and the Orkney and Shetland Isles are excluded, because their inhabitants are of Scandinavian origin. The whole of the district, which embraces the Celtic-speaking part of Scotland, is wild, rugged, and mountainous. The W. coast is indented by many narrow arms of the sea, and is flanked by numerous islands. Forming, by their natural characteristics, a region distinct from the Lowlands of Scotland, the Highlands were long in a state of political semi-independence. What especially separated this region from the rest of Scotland was not only the Celtic language and blood, but also the clan system and all connected with it.

HIGH POINT, a city in North Carolina, in Guilford co., on the Southern and the Carolina and Yadkin River railroads. It has important industries, including furniture mills, car shops, wagon factories, silk mills, etc. Pop. (1910) 9,525; (1920) 14,302.

HIGH-PRESSURE, operated by a large measure of force of some sort. A high-pressure alarm in a steam engine is an alarm intended to give notice of a dangerous head of steam, and to prevent an explosion of a steam generator. A high-pressure engine is a steam engine, condensing or non-condensing, in which the safety-valve is loaded (United States) with a weight equivalent to a boiler-pressure of 35 pounds to the square inch. The term "high-pressure" has a very indefinite signification; condensing engines are often called "low-pressure," and non-condensing engines "high-pressure," but the question of condensing is not necessarily one of pressure.

HIGH PRIEST, the chief priest in any faith, he who occupies the highest place in the hierarchy, as the Pontifex Maximus among the Romans. In Judaism, the divinely-appointed head of the Jewish hierarchy. The first to hold office was Aaron. The high priests were to be without blemish, were to avoid eating things which died of themselves, or marrying a widow or a divorced person. They were not to make mourning for private or domestic sorrows. The Romans were afraid of the influence likely to be acquired by so exalted a spiritual functionary and apparently appointed a new one every year (John xviii: 13).

HIGH SCHOOLS, a term which means, in the United States, the schools supported by the public, in which the tuition generally is free, and which prepare both sexes for their higher education in the universities and colleges. The German equivalent of the term (*Hochschulen*) is the name officially given to the German universities. A school established in Edinburgh about 1575 which was below a university in its standards was termed a high school. But practically the term now means a component part of the public school system of the United States. It is here used to distinguish it from the private schools or academies which before 1825 were the only schools in the United States beyond the elementary and grammar schools. Between 1820 and 1830 the high schools came into existence, among the first being the Central High School of Philadelphia, the Free Academy of New York which later became the College of the City of New York,

and the English High School of Boston. Horace Mann and Henry Barnard were the pioneers in the movement to establish high schools in every large city of Massachusetts and Connecticut, and it is largely due to their zeal that the movement spread beyond New England and by the time of the Civil War had taken a firm hold on the Central and Western States.

The latest available figures give the number of high schools in 1913 to be 11,277, in which are enrolled 1,134,771. The private schools were long ago eclipsed in point of numbers by the public high schools, there being but 2,168 of them with an enrollment of 148,238. Since 1914 the number of pupils going to private school has been largely increased, because the private school more effectively meets the college entrance requirements, and also the increase in wealth of great numbers of the population of the United States augmented the class of people that can afford the expense of a private school. It is estimated that even with the rapid increase in the number and size of the high schools only 23 per cent. of the children have at any time in their lives attended a school higher than the grammar grades. The percentage of those completing a high school course is barely half of the number who enter.

Many high schools still have as their object the equipping of boys and girls for college, but as the greater part of the children who attend the high schools never go to college there has been observable a tendency to broaden out the course of study. The colleges have shown a commendable spirit of co-operation in this particular, offering a large and steadily increasing number of electives in their entrance requirements. The high schools led the way in this particular and the colleges followed. The objective in view is to prepare the students in the high schools for their entrance into college and at the same time give to the vast majority who do not enter college an education that shall be useful and function in their everyday life. In recent years many high schools in addition to becoming what they really are, "city colleges," have reached to lower grades to secure their students. In many States the scholastic life of a child is divided into three parts: From 6 to 12, elementary education, from 12 to 14, grammar school education, and from 14 to 18 high school education. A still more recent tendency has been to establish what is called the "Junior High School" with a course covering the six years from 12 to 18, eliminating the division of grammar school education. This has been adopted mainly to give those children who can only get one year of the four year high school course a special training to fit their needs. There is little uniformity in the courses offered in the various high schools throughout the United States, the local conditions influencing their curriculums a great deal.

THE DE WITT CLINTON HIGH SCHOOL BUILDING, NEW YORK

HIGH SEAS, the open sea or ocean. The claims of various nations to exclusive rights and superiority over extensive

tracts of the ocean highway have been settled after much controversy by a general international law. The principle now accepted is that the jurisdiction of maritime states extends only for 3 miles, or within former cannon range of their own coasts; the remainder of the seas being high seas, accessible on equal terms to all nations. Inland seas and estuaries, of course, are excepted.

HILARION (hi-lā'ri-on), reputed to be the founder of the monastic system in Palestine; born in Tabatha, near Gaza, Palestine, about 290. He was educated at Alexandria, and converted to the monastic system by St. Anthony. He then lived as a hermit in the desert between Gaza and Egypt for many years, and finally died in Cyprus in 372. His memory is celebrated Oct. 21.

HILDA, ST., an English abbess; born in the West Riding of Yorkshire, England, in 614. She was daughter of Hereric, a nephew of Edwin of Northumbria, and was baptized at 14 by Paulinus. Recalled by Bishop Aidan from her retreat in a French monastery, she became abbess of Heorta or Hartlepool in 649. In the year 657 she founded the famous monastery at Streaneshalch or Whitby, a double house for nuns and monks, over which she ruled with remarkable wisdom for 22 years. Her effigy still stands on the ancient seal of Hartlepool, and churches preserve her name both there and at South Shields. She died in Whitby, England, Nov. 17, 680.

HILDESHEIM (hil'des-hīm), a city of Prussia, province of Hanover, 16 miles S. E. of Hanover. It has a splendid Gothic cathedral, built in the 11th century, with bronze gates 16 feet high. There are also many other splendid examples of medieval architecture. It manufactures iron products, cotton and woolen goods, tobacco, sugar, etc. From 818 to 1803 it was the capital of a bishopric. Pop. about 55,000.

HILDRETH, RICHARD, an American historian; born in Deerfield, Mass., June 22, 1807. He first became known as a miscellaneous prose-writer and political journalist. The "History of the United States" is his greatest work, covering the period from the discovery of America to the end of President Monroe's first administration (6 vols. 1849–1856). Among his other works are: "History of Banks"; "Theory of Morals"; "Theory of Politics"; etc. He went to Italy in 1861 as United States consul, and died in Florence, July 11, 1865.

HILL, ALBERT ROSS, an American educator born in Nova Scotia in 1869. He graduated from Dalhousie University in 1892 and took post graduate courses at Cornell, in Germany, and at Clark University. From 1895 to 1897 he was professor of psychology and education at Wisconsin State Normal School at Oshkosh. He was appointed assistant professor of philosophy at the University of Nebraska in 1897, and from 1898 to 1903 was professor of philosophy and director of the psychological laboratories of that institution. In the latter year he was appointed professor of educational psychology and dean of the Teachers College of Missouri, and was chosen president of that institution in 1908. He published many articles on psychology and philosophy in journals devoted to those subjects, and also contributed articles to magazines on economic subjects. He was a member of many economic societies and received many degrees from other colleges.

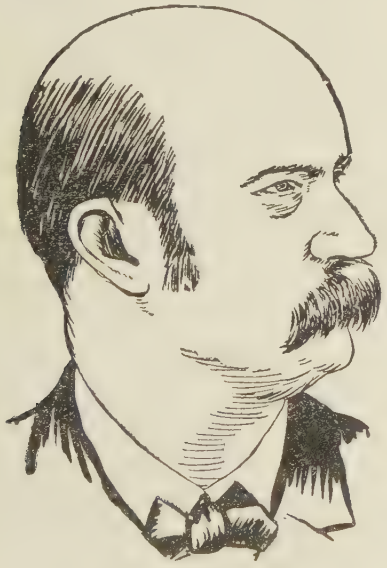
HILL, AMBROSE POWELL, an American military officer; born in Culpeper co., Va., Nov. 9, 1825; was graduated at the United States Military Academy in 1847; served in the Mexican War; resigned from the National army in March, 1861, and was made colonel of the 13th Virginia regiment; was promoted Major-General in May, 1862; was promoted Lieutenant-General May 20, 1863, and placed in command of one of the three divisions into which the Confederate army was divided. He led his corps at Gettysburg and later at Bristow Station. He was killed in front of Petersburg, Va., April 2, 1865.

HILL, DANIEL HARVEY, an American military officer; born in Hill's Iron Works, York district, S. C., July 12, 1821; was graduated at the United States Military Academy in 1842; served in the Mexican War; taught in Washington College, Virginia, and in Davidson College, North Carolina; president of the North Carolina Military Institute in Charlotte in 1859; in the Civil War entered the Confederate army as colonel, and was promoted to Lieutenant-General in 1863; commanded a corps at the battle of Chickamauga; became president of the Arkansas Industrial University in 1877; died in Charlotte, N. C., Sept. 24, 1889.

HILL, DANIEL HARVEY, an American educator, born in Davidson, N. C., in 1859. He graduated from Davidson College in 1880. He was professor of English at the Georgia Military and Agricultural College from 1880 to 1889, and was successively professor of English,

vice-president, and president of the North Carolina College of Agriculture and Engineering. The latter office he resigned in 1916 in order to write a history of North Carolina in the Civil War. He was a member of many historical societies. He contributed many articles on historical and literary subjects to magazines and also wrote "History of North Carolina Troops in the Civil War" (1899); "Gen. Greene's Retreat" (1901); "Hill Readers" (1907); "Young People's History of North Carolina" (1907).

HILL, DAVID BENNETT, an American lawyer; born in Havana, N. Y., Aug. 29, 1843. He studied law, and was admitted to practice in 1864; elected to the State Assembly in 1870–1871; in 1882 was chosen lieutenant-governor of his State, succeeding Mr. Cleveland as governor when the latter assumed the presidency. In 1885 he was renominated for the governorship by the Democracy and elected. In 1888 he was again nominated and re-elected. In 1891 he was



DAVID BENNETT HILL

chosen United States senator. He was a prominent candidate for the presidential nomination in the Democratic Convention of 1892. He died Oct. 20, 1910.

HILL, DAVID JAYNE, an American diplomat and historian, born in Plainfield, N. J., in 1850. He was educated at Bucknell University, from which he graduated in 1874, served as professor of rhetoric in this institution from 1877 to 1879, and was for the eight years following its president. From 1888 to 1896 he was president of the University of Rochester. After several years spent in Europe in the study of international law and diplomacy he was appointed Assistant Secretary of State in 1898, serving to 1903. He was appointed United States Minister to Switzerland

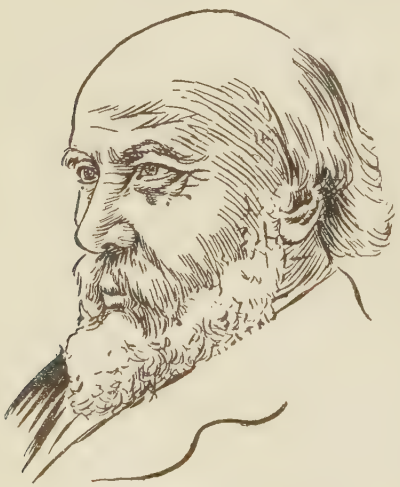
DAVID JAYNE HILL

in the latter year. Two years later he was appointed Minister to Holland. From 1908 to 1911 he was Ambassador to Germany. He was an unsuccessful candidate for the United States Senate in 1914. He served for a time as professor of European diplomacy in the School of Comparative Jurisprudence and Diplomacy at Washington and was a member of the Permanent Administrative Council of The Hague Tribunal. During the progress of the World War, and especially after the participation of the United States, he wrote much in criticism of the attitude of the Democratic administration toward the war. In July, 1920 he was chairman of the Republican State Convention in New York. He wrote much on historical and literary subjects. Among his writings are: "Life of Washington Irving" (1879); "The Contemporary Development of Diplomacy" (1904); "World Organization as Affected by the Nature of the Modern State" (1911); "A History of Diplomacy in the International Develop-

ment of Europe" (1905-1914); "Rebuilding of Europe" (1917).

HILL, FREDERIC TREVOR, an American lawyer and writer, born in Brooklyn, in 1866. He graduated from Yale University in 1887, and afterward studied law at Columbia. Among his published writings are: "The Case and Exceptions" (1900); "The Minority" (1902); "The Web" (1903); "Lincoln the Lawyer" (1906); "On the Trail of Washington" (1909); "The Thirteenth Juror" (1913). He took an active interest in the Boy Scout movement and was captain on the staff of General Pershing during the World War. He was appointed historian of the American Expeditionary Forces in France.

HILL, GEORGE WILLIAM, an American astronomer, born in New York City in 1838. He was educated at Rutgers College. In 1861 he became an assistant on the staff of the "American Ephemeris" and of the "Nautical Almanac." His notable work in astronomy won for him election to the National Academy of Sciences in 1874. He was also chosen associate and honorary member of many foreign and domestic astronomical societies. In 1887 he received a gold medal from the Royal Astronomical Society of London, and also received medals from other foreign societies. His published writings include: "A New Theory of Jupiter and Saturn" (1890). His "Collected Mathematical Works" were published in 1905–1907. He died in 1914.



JAMES J. HILL

HILL, JAMES J(EROME), an American railway financier and president. Born in 1838 in Ontario, Canada. At an early age he entered business in Minnesota and in 1870 became the leader in organizing a transportation company for the purpose of building a railroad from St. Paul to Winnipeg. Some years later he was the promoter of companies which ultimately became the Canadian Pacific Railway and the St. Paul, Minneapolis and Manitoba railroad. From 1882 to 1889 he was president of the last-named railroad; from 1889 to 1907 he was president of the Great Northern, and from 1907 to 1912 chairman of its board of directors. Later he became president of the great railroad syndicate of Northwestern United States, the Northern Securities Company. He died in 1916.

HILL, JOHN WESLEY, an American clergyman and writer, born in Kalida, O., in 1863. He graduated from the Ohio Northwestern University in 1887, studied at the Boston Theological Seminary for the two following years, and was ordained to the Methodist Episcopal ministry in 1889. After serving in many pastorates in different States, he was appointed pastor of the Metropolitan Temple in New York City, where he served from 1907 to 1912. From 1916 he was chancellor of the Lincoln Memorial University, Cumberland Gap, Tenn. He was prominently identified with civil, industrial, and patriotic movements, was an ardent Republican, and took part in all campaigns, including that of Blaine, McKinley, Taft, Hughes, and Harding. He also was president of the International Peace Forum and in 1914 organized the World Court League.

HILL, OCTAVIA, an English philanthropist; born about 1838. She was the grand-daughter of Dr. Southwood Smith, a zealous promoter of sanitary reform. While still young she began work among the London poor under Frederick D. Maurice; and in 1864, supported by Mr. Ruskin, she commenced her great work of improving the homes of workingmen in the slums and dismal alleys of the metropolis. Miss Hill wrote "Homes of the London Poor" (1875); "Our Common Land and other Essays" (1878).

HILL, ROWLAND, an English preacher, noted for his humor and eccentricities; born in Hawkstone, Shropshire, England, August 23, 1744. He was ordained in the Anglican Church, but embracing the views of the Calvinistic Methodists, he soon began to preach in barns and meeting-houses, streets, fields, and highways. In 1783 he laid the foundation of Surrey Chapel in the

Blackfriars Road, London, where he preached with great success for about 50 years, making summer excursions to the provinces, where his preaching attracted immense crowds. His best known work is "Village Dialogues." Died in London, England, April 11, 1833.

HILL, SIR ROWLAND, the author of the penny-postage system; born in Kidderminster, England, Dec. 3, 1795. After agitating, for several years, his scheme regarding a reform of the old postal and franking systems, he, in 1842, succeeded in getting it carried into effect. It at once produced great results, and in 1846 the British public presented him with a testimonial valued at $67,000. In 1854 he was made chief secretary of the English Postoffice, and held that position till 1864. In the same year he was voted a sum of $100,000 by Parliament, the Albert gold medal, Society of Arts, and the degree of D. C. L. He was the originator of the money-order system and of postoffice savings-banks. He was knighted in 1860. He died in Hampstead, near London, Aug. 27, 1879.

HILLAH, or HILLA, a town of Turkey in Asia; on the Euphrates river, 60 miles S. of Bagdad, near the ruins of Babylon, out of which it is built. Tanning and the manufacture of silk, cotton, and woolens are carried on.

HILLARD, GEORGE STILLMAN, an American lawyer; born in Machias, Me., Sept. 22, 1808. As a Massachusetts legislator he was commended by Daniel Webster, and he was conspicuous as an orator. He published "Six Months in Italy" (1853); "Life of George Ticknor" (with Mrs. Ticknor); "Life of George B. McClellan" (1864); also a series of school readers, and an addition of Spenser. He died in Boston, Mass., Jan. 21, 1879.

HILLEBRAND, WILLIAM FRANCIS, an American chemist, born in Honolulu, in 1853. He studied at Cornell University, graduated from the University of Heidelberg in 1875, and afterward studied at other German universities. From 1880 to 1908 he was chemist of the United States Geological Survey. In the latter year he was appointed chief chemist of the Bureau of Standards. He was professor of general chemistry and physics at the National College of Pharmacy, from 1892 to 1910; president of the American Chemical Society in 1906; and in 1908 he became editor of the "Journal of Industrial and Engineering Chemistry." He was the author of several books on chemical subjects.

HILLEL THE ELDER, surnamed HASSAKEN, a Jewish rabbi; born in Babylonia. He lived in the century preceding the Christian era. At the age of 40 he removed to Jerusalem, where he studied the law with such diligence as to become master of the chief school of that city. He formed a new digest of the traditionary law, from which the "Mishna," or earliest part of the Talmud, is derived. He lived to the great age of 120 years.

HILLEL THE YOUNGER, called NASI, or prince of the captivity, presided over the Jewish Church in the 3d and 4th centuries, and distinguished himself by his great astronomical learning, reforming the Jewish calendar, regulating the period of the equinoxes, etc. Hillel was also one of the doctors to whom is ascribed that portion of the Talmud called "Gemara."

HILLES, CHARLES DEWEY, an American politician, born in Belmont co., O., in 1867. He had a high school and academic education and from 1880 to 1902 was financial officer and superintendent of the Boys' Industrial School of Ohio. From the latter year until 1909 he was superintendent of the New York Juvenile Asylum, becoming president of this institution. He was Assistant Secretary of the United States Treasury in 1909, but resigned in 1911 to become secretary to President Taft. In 1912 he was elected chairman of the Republican National Committee. He was a member of the Republican National Committee from New York in the campaign of 1920.

HILLIS, NEWELL DWIGHT, an American clergyman and writer, born in Magnolia, Ia., in 1858. He graduated from Lake Forest University in 1884 and from the McCormick Theological Seminary in 1887. In the same year he was ordained to the Presbyterian ministry, serving as pastor in Peoria, Evanston, and Chicago. He was chosen pastor of the Plymouth Congregational Church in Brooklyn in 1899 and became widely known as a preacher and writer. His published writings include: "Success through Self-Help" (1903); "The Fortune of the Republic" (1906); "Battle of Principles" (1912); "Studies of the Great War" (1915); "Lectures and Orations of Henry Ward Beecher" (1913).

HILL OF TARIK (tä'rik), the rock of Gibraltar, named after the Berber leader, Tarik, who conquered the fort in 711.

HILLQUIT, MORRIS, an American Socialist. He was born in 1869 at Riga,

Russia, and there received his early education, coming in 1886 with his parents to New York, where in 1893 he graduated from the New York University Law School. Already in 1888 he had joined the Socialist party, and soon forged to the front, going as delegate to conventions, and showing much ability. He was national committeeman from New York in 1902–1906 and became member of the National Executive Committee in 1907. Socialist candidate for mayor of

NEWELL D. HILLIS

New York in 1917. In 1920 he figured prominently in the Socialist convention that gave the presidential nomination to Eugene V. Debs. His works include: "History of Socialism in the United States"; "Socialism in Theory and Practice"; "Socialism Summed Up"; "Socialism, Promise or Menace" (series of debates with the Rev. John Augustin Ryan); etc.

HILLSBORO, a city of Texas, the county seat of Hill co., on the Missouri, Kansas and Texas, the St. Louis Southwestern, and the Trinity and Brazos Valley railroads. It is in an important agricultural region and has an extensive trade in cotton and live stock. The industries include a cotton mill, flour and planing mills, and hay press works, etc. Pop. (1910) 6,115; (1920) 6,952.

HILLSDALE, a city and county-seat of Hillsdale co., Mich.; on the Michigan Southern and Lake Shore railroad; 60 miles W. of Toledo. It is the seat of Hillsdale College, and is the manufacturing and trade center of the county. It has mills, screen factories and aluminum works, daily and weekly newspapers, parks, and handsome public buildings, electric lights, National banks. Pop. (1910) 5,001; (1920) 5,476.

HILLSDALE COLLEGE, a coeducational institution in Hillsdale, Mich.; founded in 1855 under the auspices of the Free Baptist Church. Reported at the close of 1919. Professors and instructors, 18; students, 344; president, Joseph W. Mauck.

HILMI PASHA, HUSSEIN, a Turkish official. He held the position of Governor-General of Adana and of Yemen, and was then appointed inspector-general of the Macedonian vilayets. Under the "Young Turk" movement he became in 1908 Minister of the Interior, Grand Vizier in 1909, and Minister of Interior in 1913. He served for a time as Ambassador to Austria and later as inspector-general of the Syrian vilayets. He was in opposition to the Germanophile sympathies of his colleagues and in general favored British interests wherever possible.

HILO, a town in the Hawaiian Islands, on Hilo Bay, on the eastern coast of the island of Hawaii. In size and importance it is the second city on the islands. It has a court house, a customhouse, a library, and other public buildings. Its protected harbor has excellent facilities for shipping. There are many American residents. Pop. (1910) 6,745; (1920) 10,431.

HILPRECHT (hil'prec*h*t), **HERMAN VOLRATH**, an American educator; born in Germany, July 28, 1859; was graduated at the Ducal Gymnasium, Bernburg, Germany, in 1880; also studied at the University of Leipsic in 1880–1885; became professor of Assyrian and Comparative Semitic Philology at the University of Pennsylvania in 1886. He is a leading authority in cuneiform palæography, having made extensive explorations in Asia Minor, Syria, and Babylonia. Has published works in archæology, history, philology. "Oldest Version of the Babylonian Deluge, Story" (1910).

HILTON HEAD, an island off the S. E. coast of Beaufort district, S. C.; at the mouth of Broad river. During the Civil War a strong fortification was erected here by the Confederates, called Fort Walker, armed with 20 guns, and garrisoned by a force of 620 men. This

fort was attacked Nov. 5, 1861, by a Union fleet under Commodore Dupont, and captured, after a smart action, in which a Confederate flotilla, or "mosquito fleet," under Commodore Tatnall, took part. The National loss was reported at 8 killed and 23 wounded, that of the Confederates, 10 killed and 10 wounded.

HIMALAYAS (him-a-lā'yaz), **THE**, or the **HIMALAYA MOUNTAINS**, an extensive mountain range of Asia, and the loftiest in the world, bounding Hindustan on the N. and separating it from the tableland of Tibet, which stands 10,000 feet above the sea. This chain is continuous W. with the Hindu Kush and Behor-Tagh, and E. with the Chinese tableland of Yun-nan; but the term Himalaya is usually restricted by geographers to that portion of the range lying between the passages of the Indus and Brahmaputra; the former being in lat. 35° N., and lon. 75° E., and the latter in 28° 15′ N., and lon. 96° E. The direction of the range, as thus defined, is S. E. from the Indus to the Gunduk, and thence E. to its termination. Its entire length is 1,900 miles; its average breadth is 90 miles, and the surface which it covers is estimated at 160,000 square miles. The average height of the Himalayas has been estimated at 15,700 feet. The principal peaks are: Mount Everest, 29,140 feet; Kunchinjinga, in Sikkim, 28,178 feet; W. peak of the same, 27,826 feet; Dhawalagiri, in Nepal, 26,862 feet; Dhawahir, in Kumaon, 25,749 feet. The passes over the main ridge amount to about 20, a few of which only are practicable for horses, sheep being principally used as beasts of burden over the steep acclivities.

The only rock sufficiently extensive to characterize the geological formation of this great chain is gneiss. The chief minerals hereto found are gold-dust, copper, lead, iron, antimony, manganese, sulphur, alum, and rock-salt.

The mammalia of the Himalayas are chiefly confined to ruminating animals, a few varieties only of the horse and cat tribes being found in these regions. The wild horse is seen on the N. side of the range; but the principal tenants of the hilly slopes are the yak, much used as a beast of burden by the Tartars, the ghurls (*Capra ægagrus*), of which the Cashmere and Tibet goats are varieties, the Nepal stag, the black deer, the chirn, or one-horned antelope, the goral, and the nylghau. Among the birds are the lammergeyer, the common cuckoo, the Impeyan pheasant, the red-legged crow, and the wood-pigeon.

HIMANTOPUS (-man'tō-pus), a genus of grallatorial birds, family *Recurvirostridæ*, distinguished by the great length of their legs; from which circumstance they are sometimes called stilt birds. One species is found in this country, the black-necked stilt, *H. nigricollis* (Vieill.). This bird, called in Europe the Long-legged Plover, is 14 inches long. As its conformation would lead us to conclude, it is a bird whose most congenial habitat is morasses, and the low, flat shores of lakes, rivers, and seas.

HIMEJI, a city of Japan, the capital of the province of Harima. It is in the southern part of the island of Hondo. The chief industries are the manufacture of cotton and leather. Pop. about 40,000.

HIND, JOHN RUSSELL, an English astronomer; born in Nottingham, England, May 12, 1823. In 1840 he obtained a situation in the Royal Observatory at Greenwich, where he remained till June, 1844. He was then sent as one of the commission appointed to determine the exact longitude of Valentia, and on his return became the observer in Mr. Bishop's Observatory, Regent's Park, London. Here he calculated the orbits and declination of more than 70 planets and comets, noted a number of new movable stars, and between 1847 and 1854 discovered 10 minor planets (see PLANETOIDS). In 1851 he obtained from the Academy of Sciences at Paris their Lalande medal; in 1852 the Astronomical Society of London's gold medal, and a pension of $1,000 a year from the British government; in 1853 he undertook the editing of the "Nautical Almanac." He wrote: "Astronomical Vocabulary" (1852); "The Comets" (1852); "The Solar System" (1852); "Descriptive Treatise on Comets" (1857). In 1880 he was president of the Royal Astronomical Society. He died in Twickenham, England, Dec. 22, 1895.

HINDENBURG, PAUL VON BENECKENDORF UND VON, a German field marshal and Chief of the German General Staff from 1916 to 1919. Born in 1847, he first won distinction in the Austro-Prussian War of 1866 and the Franco-Prussian War of 1870. Later he rose to the rank of General and for a time was a member of the General Staff. When the war of 1914 broke out he was residing as a retired army officer at Hanover. The ill-success of the Germans in the fighting against the Russians in East Prussia caused the Kaiser to call Hindenburg from his retirement and to give him command of the German arms in East Prussia, a region which had

been the General's special study. He had scarcely been in command ten days when he inflicted a serious defeat upon the Russians at the battle of Tannenberg on Aug. 31, 1914, which caused them to evacuate all the German territory they had won. The following February by his quick concentrations and clever use of railroad facilities he won the decisive victory of the Mazurian Lakes which compelled the Russians to abandon the offensive in this section. Later in the year Hindenburg played a large part in the victorious movements of the German armies which compelled the Russians to yield Galicia, Poland, Courland, and Esthonia to their rivals. Following the failure of the German Staff before Verdun, the Kaiser summoned Hindenburg to the chief command of all the German armies. He celebrated his accession to supreme command by planning the campaign against Rumania by which that country was completely occupied in less than four months after it had declared war. For a time during 1917 and 1918 he was no less successful in his operations against the Allies in the West, but the large re-enforcements of the Americans and the gradually decreasing morale of his own troops brought eventual defeat and revolution. Unlike many of his associates he did not go into exile but remained at his post until after the armistice was signed and the retirement of the German army behind the Rhine.

FIELD-MARSHAL VON HINDENBURG

HINDENBURG LINE. See WORLD WAR.

HINDI (hin'dē), the language spoken in the valley of the Ganges and its tributaries, from the watershed of the Jumna as far down as Rajmahal. It is the legitimate heir of the Sanskrit.

HINDLEY, a district in Lancashire, England. It has important coal mining and cotton industries. It contains a free grammar school and an old parish church. Pop. about 24,000.

HINDUISM, the system of religious belief held by the ordinary Hindus, as distinguished from that of the Indian aborigines and the Mussulman and Christian invaders.

HINDU KUSH (hin'dö kösh), or **INDIAN CAUCASUS**, a mountain system of Central Asia. It is generally considered as a continuation of the Himalayas, which it adjoins at the Indus, and then stretches W. till it unites with the Ghur Mountains in North Afghanistan. Its culminating point, in the range of Hindu-Koh, to the N. of Cabul, is far beyond the limit of perpetual snow, but is not supposed to exceed 20,000 feet.

HINDUSTAN (hin-dö-stän'), the name commonly given to the whole Indian Empire, but which properly applies only to the Punjab and the valley of the Ganges. See INDIA.

HINDUSTANI (-stä'nē), a native of Hindustan proper. The word is also applied to a language which apparently arose from the efforts made by the Hindus and their Mohammedan conquerors to understand each other. It approaches HINDI (*q. v.*), but has a large admixture of both Persian and Arabic words foreign to India. Hindustani will carry one all over India, but is really the vernacular of the Mohammedans only, and not of the Hindus properly so called. It is sometimes called Urdu or Oordoo. When people speak of the Indian language they mean Hindustani, but the designation is erroneous. There are at least 12 leading Indian languages.

HINGHAM, a town in Plymouth co., Mass., on Massachusetts bay and on the New York, New Haven and Hartford railroad; 14 miles S. E. of Boston. It is a popular summer resort, with steamship connections with Boston, and has the oldest "Meeting House" in New England, first occupied in 1682. It has a high school, Derby Academy, public library, manufacturing and fishing interests, banks and newspapers. Pop. (1910) 4,965; (1920) 5,604.

HINKSON, KATHERINE (TYNAN), an Irish poet and novelist; born in Dublin in 1861. She was educated in a convent and in 1893 she married

H. A. Hinkson, after which she resided in London. She was a prolific writer of novels and was also well known as a poet. Among her novels are "Peggy" (1908); "Princess Katherine" (1911); "The Romance of Lady Sarah Lennox" (1913). She published an autobiography entitled "Twenty-five Years." She was one of the chief figures in the Irish literary revival.

HINNY, a hybrid, the produce of a stallion and a she-ass. It is smaller and inferior in strength to the mule produced by an ass and a mare, and it is also much less common.

HIOGO (hē-ō'gō), a seaport of Japan, opened to foreign trade in 1860. It is situated on the island of Hondo, on the Bay of Osaka, 40 miles S. W. of Kioto, with which it has railway communication. The trade with the interior is important, and the exports of tea, copper, fish, silk, etc., large. Pop. with Kobe, about 500,000.

HIP, the fruit of the dog-rose or wild-brier. It contains tannin, sugar, citric and malic acids, and is sometimes used in making conserves.

HIP JOINT, one of the most important articulations in the body, and the most complete example of the ball-and-socket joint. The hip joint is made up of two bones—the acetabulum, or cup-like cavity in the os innominatum, or three bones forming one-half of the pelvis; and the head of the femur, or thigh-bone, the same provision being made here, by capsular, conical, transverse, and lateral ligaments, to secure the bone in its socket, and yet afford unlimited play to the limb; while, to guard it from blows and the force of accidents, the part is padded with a number of short, fleshy muscles, in addition to which a quantity of adipose tissue beneath the cuticle still further protects the part.

HIP JOINT, DISEASES OF THE, a disease differing in many important points from other joint-diseases. Its connection with scrofula is more distinctly marked than that of most other joint diseases, and it almost always occurs before the age of puberty. It comes on, in children or young persons of a scrofulous constitution, from very slight causes; thus, it is often traced to over-exertion in a long walk, a sprain in jumping, or a fall; and in many cases no apparent cause can be assigned. In the early stage of the disease the whole of the structures of the joint are inflamed, and by proper treatment at this period the morbid action may be sometimes subdued without any worse consequences than a more or less rigid joint.

As the disease advances abscesses occur around the joint. True shortening of the limb now takes place, which at the same time becomes adducted and inverted. From this stage, if the health is pretty good, and the lungs are sound, the patient may be so fortunate as to recover with an anchylosed (or immovable) hip joint; but the probability is that exhaustion and hectic will come on, and that death will supervene.

HIPPARCHUS (-pär'kus), tyrant of Athens. He was son of PISISTRATUS and brother of HIPPIAS, with whom he reigned 527–514. While conducting in Athens a solemn procession to the Temple of Minerva, he was slain by HARMODIUS and ARISTOGEITON, 514 B. C.

HIPPARCHUS, an ancient Greek astronomer; born in Nicæa, Bithynia. He lived about 160–125 B. C. He resided for some time at Rhodes, but afterward went to Alexandria, then the great school of science. A commentary on Aratus is the only work of his extant. He first ascertained the true length of the year, discovered the procession of the equinoxes, determined the revolutions and mean motions of the planets, prepared a catalogue of the fixed stars, etc.

HIPPIAS (hip'pi-as), tyrant of Athens. He was the son of Pisistratus, at whose death he assumed the government, in conjunction with his brother HIPPARCHUS (*q. v.*), on whose death he seized the reins of government, and revenged the death of his brother by putting to death all of whom he entertained the least suspicion. His tyranny at last became so obnoxious to the citizens that he was expelled from the city 510 B. C. He afterward induced Darius to apply to the Athenians in his favor; and their decisive refusal kindled the first war of the Persians against the European Greeks. According to some authorities he fell at Marathon, fighting against his countrymen, 490 B. C.

HIPPO, sometimes called Hippo Regius to distinguish it from another town of the same name on the Carthaginian coast; an ancient Numidian city, the ruins of which still exist a short distance S. of Bona in Algeria. It was the episcopal see of St. Augustine, and was destroyed by the Vandals in 430.

HIPPOBOSCIDÆ (bos'si-dē), a family of dipterous insects, parasitic on birds and quadrupeds. The type is the genus *Hippobosca* or horse-fly.

HIPPOCAMPUS, a genus of fishes, closely allied to the pipe-fishes; the upper parts have some resemblance to the head and neck of a horse in miniature, which has suggested the name. When swimming they maintain a vertical position; they occur in the Mediterranean and Atlantic.

HIPPOCRAS, a spiced beverage, held in great esteem by the monks in the Middle Ages as a warm and grateful cordial and stimulant in cases of cold, and also as a beverage in winter nights, and for the aged and relaxed. The spiced hippocras consisted of cinnamon, cloves, etc., bruised and macerated for seven days in Canary wine (Madeira), and then sweetened either with honey or sugar. The "ypocras," for lords and abbots, was prepared with aqua vitæ, or brandy, spices, ambergris, and musk.

HIPPOCRATES (pok'ra-tēz), the greatest physician of ancient times, usually designated the "Father of Medicine"; born in the Island of Cos, about 460 B. C. Hippocrates belonged to the family of the Asclepiades, priest-physicians, who claimed to be descended from Æsculapius, god of medicine. He practiced medicine in Athens, Thrace, Thessaly, Delos, and in other parts of Greece. Among his genuine writings are: "Prognosis"; "Aphorisms"; "On Epidemics"; "On Diet in Acute Diseases"; "On Air, Water, and Place"; "On Wounds of the Head." He died in Larissa, Thessaly, about 377 B. C.

HIPPOCRENE (hip'pō-krēn), a celebrated fountain on Mount Helicon in Bœotia, sacred to the Muses. It was fabled to have burst from the ground when struck by the feet of Pegasus, and to possess the power of poetic inspiration.

HIPPODROME, the Greek name for the public place where the horse and chariot races were held. The name is sometimes applied to a modern circus.

HIPPOLYTE (-pol'i-tē), in classical mythology, a queen of the Amazons, given in marriage to Theseus by Hercules, who had conquered her, and taken away her girdle by order of Eurystheus. She had a son by Theseus, called HIPPOLYTUS (*q. v.*).

HIPPOLYTUS (-pol'i-tus), in classical mythology, a son of Theseus and Hippolyte, famous for his continence. His step-mother, Phædra, fell in love with him, and when he refused to pollute his father's bed, she accused him of offering violence to her person before Theseus, who, believing the accusation, entreated Neptune to punish his son. Hippolytus fled from the resentment of his father, along the seashore. His horses were frightened at the noise of sea-calves, which Neptune had purposely sent there; his chariot was broken and he was killed. On this myth, Euripides founded his play entitled "Hippolytus."

HIPPOMANE (-pom'a-nē), a genus of plants, order *Euphorbiaceæ*. The species *H. mancinella* is the famous Manchineel tree, which is asserted to be so poisonous that persons have died from merely sleeping in its shade. It flourishes in the Antilles and on the American continent, near the sea, and forms a very handsome tree, with foliage not unlike that of the pear tree. The juice which fills the tree is of a pure white color, and when dropped on the hand it burns like fire, forming an ulcer very difficult to heal. The fruit, which resembles a very beautiful apple in appearance, contains a similar juice, but of a milder character. The timber is beautifully variegated, and susceptible of a high polish.

HIPPOPOTAMUS (pot'ā-mus), in ordinary language, the river horse, *H. amphibius*. It inhabits the great rivers and lakes of Africa. Anciently it was found in the lower part of the Nile: now it does not occur there. It is at home in the water, diving beneath it when danger arises, but at intervals raising its head above the surface to breathe. It feeds chiefly on the roots and bark of water trees and plants. It lands during the night to look for pasture, and is destructive to crops. Its tusks furnish the best ivory; its flesh is eaten.

In zoölogy, the typical and only admitted genus of the family *Hippopotamidæ*. The hippopotamus is now found only where the water never freezes, but is of nearly uniform temperature throughout the year.

HIPPURIS (pū'ris), in botany, mare's tail, a genus of *Haloragaceæ*, tribe *Halorageæ*. The perianth is single, superior, forming a very indistinct rim to the germen; stamen one; style one; fruit one-celled, one-seeded. Known species one or two.

HIPPURITES (-ī'tēz), a genus of fossil bivalves, having the under shell of great depth and of a conical form, with a flat lid or operculum, occurring in the lower chalk. They are allied to the living Chama, or gaping cockle.

HIRAM, a king of Tyre, who sent to congratulate David on his accession to the throne, and aided him in building his palace (II Sam. v: 11; I Chr. xiv: 1).

He was the father of Abibaal of secular history. Also a king of Tyre, a grandson of the former (II Chr. ii: 14), and like him a friend of David. He congratulated Solomon at the commencement of his reign, and furnished essential aid in building the Temple.

HIRAM COLLEGE, a coeducational institution in Hiram, O.; founded in 1850 under the auspices of the Christian Church; reported at the close of 1919: Professors and instructors, 22; students, 357; president, M. L. Bates, A.M.

HIROSAKI, a town of Japan in the northern part of the island of Hondo. The chief industry is the manufacture of lacquered ware. Pop. about 40,000.

HIROSHIMA, a city of Japan, the capital of the Province of Aki. It is in the southwestern part of the island of Hondo. It is an important commercial city, and is the center of the trade in lacquered ware, bronze, and other objects of art. Pop. about 145,000.

HIRSCH, MAURICE, BARON DE, an Austrian Jewish philanthropist and financier. He inherited a considerable fortune from his father in 1869 and greatly increased this by marriage. He also made enormous sums from building railways in Rumania and Turkey. His fortune was estimated at $200,000,000. During his life he gave away about $100,000,000, chiefly for the alleviation of conditions among the Jews. A large part of these sums was given to the Jewish Colonization Association for the establishment of colonies in Argentina. He also endowed schools in Galicia and he gave $2,500,000 to establish a fund in New York for the education and Americanization of Russian and Rumanian Jews. His wife on her death in 1899 bequeathed $1,200,000 to this fund. Baron de Hirsch died in 1896.

HIRSCHBERG, a city of Silesia, Germany. Prior to the World War it had important manufactures of linen, lace, cotton goods, cement, etc. Pop. about 21,000.

HIRST, FRANCIS W., a British author. He was born in 1873, and was educated at Clifton College and Oxford. He became a barrister in 1899 and from 1907 to 1916 was editor of "The Economist." His works include: "Essays in Liberalism"; "Local Government in England" (with J. Redlich, 2 vols. 1903); "The Manchester School"; "Adam Smith" (English Men of Letters, 1904); "Trusts and Cartels" (1905); "The Arbiter in Council" (1906); "The Stock Exchange" (1911); "The Six Panics" (1913); "The Political Economy of War" (1915).

HISSAR, a province of Bokhara, from which it is separated by a S. offset of the W. prolongation of the Thian-Shan Mountains. This range forms its N. boundary. The soil is fertile, and yields wheat, flax, cotton, rice, and garden fruits. Copper and rock-salt abound. The inhabitants are chiefly Usbegs and Tajiks. They export corn, salt, flax, and sheep to Bokhara. The main route from India to Bokhara passes through the province. The province was annexed by the Emir of Bokhara in 1869. The capital is the town of Hissar, on the Kafirnihan river. Its people are noted sword makers. Pop. about 10,000.

HISSAR, the capital of a district of that name in the Punjab, on the Western Jumna canal, 102 miles W. of Delhi. Pop. about 20,000. The district of Hissar, lying on the W. verge of the Bikanir desert, has an area of 3,540 square miles, and its fertile soil produces rice, millet, barley, grain, wheat, etc.; but the crops are entirely dependent upon the rainfall. Pop. about 500,000. Area of Hissar division, 8,355 square miles; pop. about 1,400,000.

HISTOLOGY, that branch of anatomy which examines and treats of the minute structure of the tissues of which living organisms are composed. It is divided into several sections. Human histology treats of the tissues of man; comparative histology treats of the tissues of the lower animals; and vegetable histology treats of the tissues of plants. By others histology is divided into three sections: general histology, which considers the tissues of which the human and animal body generally is composed; histology proper, in which the various tissues in their anatomical relations and composition are considered; and topographical histology, dealing with the more minute structure of the organs and systems of the body. Each of these subdivisions may be divided again into normal histology, which refers to the healthy tissues, and pathological histology, which investigates the changes they undergo in disease. Marie François Xavier Bichat (1771–1802) is generally credited with the foundation of the science of histology. The marvelous powers developed by the compound microscope enable investigators now to penetrate into the most recondite tissues. It has been found that all structures however complex are made up of cells, and that the parts of a body may be resolved into a small number of elemen-

tary tissues now grouped as: (1) epithelium, which lines almost all the cavities of the body and is directly or indirectly in communication with the atmosphere; (2) the nervous tissues, which as nerve cells originate and as nervous fibers transmit all nervous impulses; (3) muscle, which produces motion whether voluntary or involuntary; (4) glandular tissue, which consists of cells standing in close relation with the blood-vessels and which take from the blood certain substances and secrete them; (5) connective substances, which support and hold together the more delicate and important structures, especially forming the cartileges and bones.

Many tissues have the power of repairing injuries that happen to them. This power is called regeneration and is found especially in the lower animals, in polyps, worms, and in many amphibious creatures and reptiles. In other cases the lesion is supplied by a new growth of connective substance.

Vegetable histology is that department of botany which deals with the microscopic phytotomy or anatomy of plants, especially investigating the plant cells and plant tissues.

HISTORICAL ASSOCIATION, AMERICAN, a society of historical students and writers founded in 1884 and which held its first meeting in Saratoga, N. Y. Five years later by an act of Congress it was granted a charter in the District of Columbia. The society holds annual meetings at various cities in the United States. Under its direction two important commissions of scholars have labored, one, the Historical Manuscripts Commission, the other the Public Archives Commission, both of which have rendered valuable public service. The "American Historical Review" is published quarterly by the association.

HISTORY, the record of the most important bygone events in human history chronologically arranged, with an inquiry into their causes, and the lessons which they afford with regard to human conduct. A history may be of an institution, an invention or art gradually perfected, as, the history of shipbuilding, the history of painting; or of thought, as, the history of philosophy. Branches of history now named separately are archæology and biography. Also a book treating of the history of any country, people, science, or art.

HIT (ancient Is), a town of Turkey in Asia, on the Euphrates, 85 miles W. N. W. of Bagdad. It has pits of bitumen, which have been worked from time immemorial, and naphtha springs.

HITCHCOCK, CHARLES HENRY, an American geologist, born in Amherst, Mass., in 1836. He graduated from Amherst College in 1856 and studied afterward at the Yale Divinity School and the Andover Theological Seminary. His professional studies were carried on in London and in the United States. He also lectured on zoölogy at Amherst College from 1858 to 1864, and from 1868 to 1908 he was professor of geology and mineralogy at Dartmouth College. In 1908 he became professor emeritus. He served as assistant state geologist for Vermont, Maine, and New Hampshire. He lectured on geology at various colleges. His researches in geology on mountains in eastern United States were especially valuable. He was a member of many scientific societies and received honorary degrees from several colleges. He published "Elementary Geology" (1861); "Mount Washington in Winter" (1871); "Hawaii and Its Volcanoes" (1909), together with many articles in scientific magazines and publications.

HITCHCOCK, ETHAN ALLEN, an American diplomatist; born in Mobile, Ala., Sept. 19, 1835; received an academic education and entered mercantile life; subsequently president of railway and mining companies. In 1897 he became United States minister to Russia; in 1898, ambassador; and in 1899, Secretary of the Interior in McKinley's Cabinet. He died in 1909.

HITCHCOCK, FRANK HARRIS, an American public official, born at Amherst, Ohio, in 1869. He graduated from Harvard in 1891. After studying law at George Washington University he was admitted to the bar in 1894. He served in various posts in the government service and in 1905 was appointed First Assistant Postmaster-General. He was Postmaster-General in President Taft's Cabinet from 1909 to 1913. During his administration postal savings banks and parcel post was established. On his retirement from office he resumed the practice of law in New York City. He managed the campaign of President Taft in 1908, and the campaign for the nomination of Charles E. Hughes in 1916. In 1920 he was manager of the campaign for General Leonard Wood. He was a member of many economic societies.

HITCHCOCK, GILBERT MONELL, a United States Senator from Nebraska. Born at Omaha, Neb., in 1859, and educated at Baden-Baden, Germany, and the

University of Michigan. After practicing law in Omaha for a few years he entered the newspaper business in 1885 by founding the Omaha "Evening World" and later the "World-Herald." He served three terms as a Democratic member of the National House of Representatives before he became United States Senator in 1911. Six years later he was re-elected, his present term expiring in 1923. Senator Hitchcock was chairman of the Foreign Relations Committee during the war with Germany and when the Republicans organized the Senate in 1919 he became the minority leader.

HITCHCOCK, JAMES RIPLEY WELLMAN, an American writer on art; born in Fitchburg, Mass., July 3, 1857. He wrote: "The Western Art Movement" (1885); "A Study of George Inness" (1885); "Madonnas by Old Masters" (1888), the text to photogravures; "The Future of Etching"; "Some American Painters in Water Colors"; "Etching in America"; "Notable Etchings by American Artists"; etc. He died in 1918.

HITCHCOCK, ROSWELL DWIGHT, an American theologian; born in East Machias, Me., Aug. 15, 1817. He was long president of Union Theological Seminary. He wrote: "Analysis of the Bible" (1869); "Socialism" (1879); "Life of Edward Robinson"; "Hymns and Songs for Social and Sabbath Worship"; "Eternal Atonement" (with Francis Brown); etc. He died in Somerset, Mass., June 16, 1887.

HITOPADESA (hit-ō-pä-dē'sä), a collection of fables and stories in Sanskrit literature, usually ascribed to the compilation of the Brâhman Vishnusarman. It is a popular summary in four books of the larger work, the famous "Panchatantra," which directly and indirectly has been the source whence a rich stream of folk-tales has flowed over Europe.

HITTITES (hit'tīts), the English name of a people who waged war with Egypt and Assyria for a thousand years, and who moved on parallel lines with the people of Israel from the call of Abraham to the Captivity.

When the Semitic tribe with Abraham at their head moved from Haran to Canaan the Hittites inhabited the land (Gen. xv: 20), and 50 years later Abraham, a wandering sheikh, purchased a grave for his wife from the Hittites, who were then in possession and power at Hebron (Gen. xxiii: 4). The patriarch's family continued to live side by side with the Hittites; and Esau, the *bedawi*, the grandson of Abraham, married two Hittite wives (Gen. xxvi: 35). During the sojourn in Egypt the Israelites had the promise of occupying the land of the Hittites oft repeated (Exod. iii: 8).

Next in importance is the testimony of the Egyptian and Assyrian inscriptions. In the Egyptian inscriptions the Hittites stand out as rivals of the Pharaohs in peace and war from the 12th to the 20th dynasty.

The Hittites occupy an important place in the Assyrian inscriptions. The reign of Sargon of Agade has been placed about the 19th century B. C. Even as early as the reign of Sargon I. the Hittites were a formidable power, and it has been supposed occupied Mesopotamia. About 1130 B. C., the Hittites were paramount from the Euphrates to the Lebanon. Tiglath-pileser I. drove back the Hittites from his borders, and made them tributaries, but they soon threw off the Assyrian yoke, and a desperate struggle for supremacy was waged for 400 years. The reign of Assur-nasir-pal (883–858 B. C.) is largely a record of wars with the Hittites. His son, Shalmaneser, undertook 30 campaigns chiefly "in the land of the Hittites." The war continued to the close of the king's reign, and was carried on by the kings who succeeded him; and 100 years later the Assyrians were still in deadly conflict with the Hittites. Sargon II. came to the throne in 721 B. C., and his first year was distinguished by the capture of Samaria and the captivity of the Israelites, and four years later (717 B. C.) he brought the empire of the Hittites to a close by the defeat of Pisiri and the capture of Carchemish.

Thus ended the mighty empire of the Hittites, having maintained its existence, defying all enemies, longer than the empires of Babylon, or Assyria, or Greece, or Rome.

HIVAOA (hē-vā-ō'ä), an island in the South Pacific Ocean, the largest of the S. W. group of the Marquesas; 22 miles long E. to W.; about 10 miles greatest breadth. It is mountainous, and bears indications of volcanic eruptions. Pop. about 3,500.

HIVITES (hiv'īts), a Canaanitish people, the main body of whom lived in the region from Lebanon and Hermon to Hamath, but who had colonies, apparently isolated, in Southern Palestine, as at Gibeon.

HLASSA. See LHASSA.

HOANG-HO (hwang'hō), a great river of China, and one of the most prominent features in the geography of

that empire. It rises near lat. 34° N., lon. 98° E. Though broad and rapid, it is in many places so shallow as to be unfavorable for navigation. Its length is estimated at about 2,600 miles.

HOAR, EBENEZER ROCKWOOD, an American jurist; born in Concord, Mass., Feb. 21, 1816; was judge of the Massachusetts Supreme Court in 1859–1869; United States attorney-general in 1869–1870; joint high commissioner on the Treaty of Washington in 1871, and member of Congress in 1873–1875. He was the son of Samuel Hoar, a lawyer and member of Congress in 1835–1837, and his mother was a daughter of Roger Sherman. He died in Concord, Mass., Jan. 31, 1895.

HOAR, GEORGE FRISBIE, an American statesman; born in Concord, Mass.,

GEORGE FRISBIE HOAR

Aug. 29, 1826; a brother of Ebenezer R.; was a member of Congress in 1869–1877; member of the Electoral Commission in 1877; and was elected United States Senator in the same year, and in 1883, 1889, 1895, and 1901. Died at Worcester, Mass., Sept. 30, 1904.

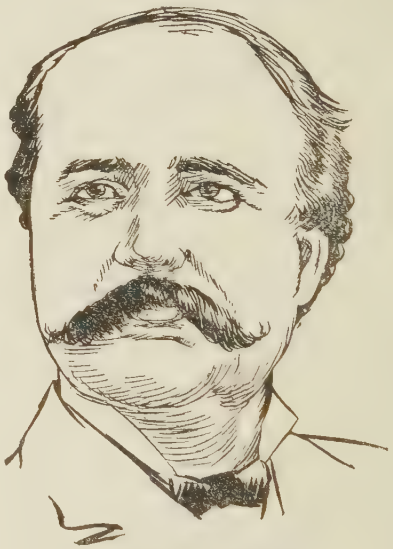
HOARSENESS, an affection of the throat causing harshness and roughness of voice, due to irregular and imperfect bringing together of the vocal cords, most frequently from swelling of the mucous membrane of the cords, and excessive secretion of mucus in their neighborhood.

HOATZIN, or **HOACTZIN**, *Opisthocŏmus cristātus*, a singular gregarious South American bird, sometimes called the crested touraco. The plumage is brown streaked with white, and the head has a movable crest. It is of the size of a pheasant, and has an enormous crop with a very small gizzard.

HOBART, up to 1881 Hobart Town, the capital of Tasmania; at the foot of Mount Wellington (4,166 feet), on the Derwent river; about 12 miles from its mouth. Among the public buildings are the government house, the government offices, the houses of Parliament, town hall, postoffice, museum, Episcopal and Roman Catholic cathedrals. There are several jam manufactories, breweries, flour mills, tanneries, a woolen factory, etc.; and in connection with the shipping interest first-class patent slips. Pop. (1917) 40,352.

HOBART COLLEGE, an institution for higher education, at Geneva, N. Y. In 1919 the faculty numbered 26, and the students 95. The library contains about 60,000 volumes, and the annual income amounts to about $85,000. President, M. Bartkett, D.D.

HOBART, GARRET AUGUSTUS, a Vice-President of the United States; born in Long Branch, N. J., June 3, 1844; was graduated at Rutgers College in 1863, and admitted to the bar in



GARRET A. HOBART

1869; practiced in Paterson, N. J.; was a member of the New Jersey Assembly in 1873–1874, and speaker during the latter year. Later he was chosen a member of the State Senate, of which he was president in 1881–1882. In Novem-

ber, 1896, he was elected Vice-President of the United States. He died in Paterson, N. J., Nov. 21, 1899.

HOBBEMA, MEINDERT or MINDERHOUT (hob'ēmä), a Dutch landscape painter; born in Amsterdam in 1638. His paintings consist chiefly of forest scenes, ruins, villages, etc., and are highly valued for their excellence in perspective and coloring. The figures in them were generally painted by others. He died in 1709.

HOBBES, JOHN OLIVER, pseudonym of PEARL MARY TERESA CRAIGIE, an American novelist and dramatist; born in Boston, Mass., Nov. 3, 1867. In 1887 she married Reginald Walpole Craigie, from whom she obtained a divorce and the custody of her child, in July, 1895. She was educated in Paris and London. Her works include: "Some Emotions and a Moral" (1891); "A Bundle of Life" (1894); "Journeys End in Lovers Meeting," proverb in one act, written for Miss Ellen Terry (1894); "The Gods, Some Mortals, and Lord Wickenham" (1895); "School for Saints" (1897); "Robert Orange" (1900). She died Aug. 3, 1906.

HOBBES, THOMAS, an English philosopher; born in Malmesbury, in 1588. He lived on intimate terms with Bacon, Ben Jonson and all the distinguished men of his time; he became tutor to the Prince of Wales, afterward Charles II., and though many of his philosophical and political opinions have been condemned, he must be considered the father of psychology, and the first great English writer on the science of government. His principal works are the treatises "On the Citizen" and "The Leviathan," both of which were censured by Parliament in 1666; "Human Nature"; "On the Body Politic"; "On Liberty, Necessity and Cause"; and "Behemoth." He died in 1679.

HOBOKEN, a city in Hudson co., N. J., on the Hudson river opposite New York City, and on the Lackawanna, the West Shore, and Lehigh Valley railroads. It is connected with New York City by ferries and by tubes. It is the terminal for several important European steamship lines. It is the seat of Stevens Institute of Technology, and has considerable manufacturing interests. It has electric lights, and street railways, waterworks, public schools, public library, high schools, several private and preparatory schools, daily and weekly newspapers and National banks. Pop. (1910) 70,324; (1920) 68,166.

HOBSON, RICHMOND PEARSON, an American naval officer; born in Greensboro, Ala., Aug. 17, 1870; was graduated at the United States Naval Academy in 1889, and received further training in the Ecole d'Application du Génie Maritime, Paris. In 1894–1895 he served in the Bureau of Construction and Repairs of the Navy Department. Subsequently he originated a post-graduate course for such officers as intended to study naval construction, and conducted the course in 1897–1898. At the outbreak of the American-Spanish War he was promoted lieutenant, and assigned to duty on the flagship "New York," with which he participated in the blockade of Santiago Harbor, the bombardment of Matanzas, and in the naval demonstration against San Juan, Porto Rico. The event, however, with which his name is most intimately connected was the sinking of the collier "Merrimac" on June 3, 1898, in the narrow entrance of Santiago Harbor, with the intention of preventing the Spanish fleet from leaving the inner bay. As the "Merrimac" was sinking he and seven volunteers who had accompanied him leaped overboard and were picked up by the Spaniards and imprisoned for a few weeks, but were treated with kindness by the order of Admiral Cervera. Later he went to Manila, where he directed the raising and repairing of the Spanish ships sunk in the engagement with Admiral Dewey on May 1, 1898. He was elected to Congress from the 6th Alabama District (1907–15). He published "American War Policy" (1910); "Our Country's Destiny" (1913); "America and the World War" (1917); "The Great Reform" (1918).

HOCHE, LAZARE (hōsh), a French soldier; born in Montreuil, a faubourg of Versailles, June 25, 1768. Enlisting at 16, he rapidly obtained promotion by his courage and capacity, and was given in 1793 the command of the Army of the Moselle, for his defense of Dunkirk against the Duke of York. Here he tried to cut off the communication between the Prussians and Austrians, and, though foiled by the superior forces of the Duke of Brunswick, yet managed to drive the Austrians out of Alsace. His next important service was putting an end to the civil war in La Vendée. He commanded the unfortunate expedition for the conquest of Ireland (1796), when the ships were scattered by storms. Soon after he was placed in command of the Army of the Sambre and Meuse. On April 18, 1797, he crossed the Rhine at Neuwied, and had defeated the Austrians in several battles, when an ar-

mistice was concluded between the Archduke Charles and Bonaparte at Leoben. Died, Sept. 18, 1797.

HOCHHEIM, a town of Prussia in Hesse-Nassau, on the right bank of the Main, 3 miles E. of Mainz. Here is produced the excellent white wine known as "Hochheimer," whence was derived, before 1625, the English name "Hock," now applied loosely to almost any white Rhenish wine.

HÖCHSTADT. See BLENHEIM.

HOCKEY, a game of ball known as "shinty" in Scotland, and "hurling" in Ireland. It is played with a club curved at the lower end, by a number of persons divided into two parties or sides; and the object of each side is to drive the ball into that part of the field marked off as their opponents' goal. In England the game is quite popular. In the United States it is played by school boys, who sometimes call the game "shinney."

HOCKING, SILAS KITTO, an English novelist born in St. Stephen's, Cornwall, in 1850. He entered the Wesleyan ministry and resigned in 1896 to devote all his time to the writing of novels. These attracted a wide sale, although they were little noticed by the critics. Among them are "God's Outcast" (1898); "Who Shall Judge" (1910); "In Self-Defense" (1914).

HODGE, FREDERICK WEBB, an American ethnologist, born in Plymouth, England, in 1864. He was brought to this country at the age of seven years and was educated in the public schools, and entered Columbian, now George Washington, University. He took part in several archæological expeditions carried on by the United States Government and archæological societies in Arizona and New Mexico from 1886 to 1889. In the latter year he became editor of publications and librarian of the Bureau of American Ethnology. He continued his researches among the Indians of Arizona and New Mexico and was the first to successfully climb the "Enchanted Mesa" in New Mexico. From 1905 he devoted special attention to the Handbook of the Bureau of American Ethnology. From 1910 he was ethnologist-in-charge at the Bureau of American Ethnology. He was a member of many scientific societies. His published writings include "Coronado's Route from Culiacan to Quivira" (1899). He edited the narratives of early Spanish explorers.

HODGE, HENRY WILSON, an American civil engineer, born in Washington in 1865. He was educated at private schools and at the Rensselaer Polytechnic Institute, from which he graduated in 1885. He acted as assistant engineer to several bridge building companies and designed many important bridges for railroads and for other purposes. He was engineer for the City of New York in the construction of a number of large bridges and aqueducts. He was consulting engineer for the Brooklyn Rapid Transit and for the New York and New Jersey Interstate Bridge and Tunnel Commission, and many other corporations. He was public service commissioner for the State of New York in 1917. During the World War he acted as director of railways in France for the American Expeditionary Force. He was a member of many scientific societies. Died Dec. 21, 1919.

HODGES, GEORGE, an American theologian, born in Rome, N. Y., in 1856. He graduated from Hamilton College in 1877. After serving as rector in Calvary Church in Pittsburgh, he was appointed dean of the Episcopal Theological School at Cambridge, Mass. He became widely known as a writer on theological and economic subjects. Among his published works are "Three Hundred Years of the Episcopal Church in America" (1906); "The Training of Children in Religion" (1910); "Everyman's Religion" (1911); "Saints and Heroes" (1911).

HODSON, WILLIAM STEPHEN RAIKES, an English soldier; born near Gloucester, March 19, 1821. He joined the Indian army in 1845, and got his first experience in the Sikh War. From 1849 to 1852 Hodson was employed in the work of civil government in the Punjab. In 1856 he was deprived of command on account of irregularities in the regimental accounts and of his unjust treatment of the troops and natives under his authority. In the crisis of the mutiny, however, he was appointed head of the intelligence department in the army engaged before Delhi, and raised a new regiment of irregular cavalry, known as Hodson's Horse. With this body of men Hodson took part in the siege of Delhi. After the fall of Delhi Hodson discovered the Mogul sovereign and his sons; these last he shot dead with his own hand at the time of capture. He was killed in 1858, during the assault on a royal palace in Lucknow.

HÖDUR, or **HÖDER** (hō'der, in Scandinavian mythology, a god of darkness, the blind god who killed Balder, at

the instigation of Loki. Hödur typifies night, as Balder typifies day.

HOE, RICHARD MARSH, an American inventor; born in New York City, Sept. 12, 1812. In 1846 he perfected a rotary printing-press which was called "Hoe's lightning press." Subsequently he invented the Hoe web perfecting press. These were especially adapted to newspaper printing and made a revolution in that art. He died in Florence, Italy, June 7, 1886.

HOEBER, ARTHUR, an American painter; born in New York City in 1854. He studied in New York and Paris. While well known as a successful painter his reputation perhaps rests on his art criticism. He was art director for the "New York Times" for three years and was assistant editor of the "Illustrated American" for one year. He later was art critic for the "New York Globe" and "Commercial Advertiser." He was also widely known as a lecturer on art subjects. His popular writings include "The Treasures of the Metropolitan Museum of Art" (1892); "Painting in the Nineteenth Century in France, Belgium, Spain and Italy. He was a member of the International Art Association of Chicago. He died in 1915.

HOEFER, EDMUND (ho'fer), a German novelist; born in Greifswald, Oct. 15, 1819. He studied philology and history at Heidelberg. He began early to write fiction, his first stories appearing in collected form under the title "From the People," and proving very popular. They were followed by "Out of the Old Time and the New"; "As the People Speak"; and "Days that Are No More." The novels that followed, especially "German Hearts"; "The Demagogue"; "The Lost Son"; and "Lost in the World," had a wide circulation. He died in Cannstadt, May 23, 1882.

HOETZENDORF, BARON FRANZ CONRAD VON, an Austrian general; born in Penzing, 1852; received a military education, then, at the age of 19, received his commission as a lieutenant. In 1878–1879 he served on the General Staff in Bosnia and Herzegovina, when those two Turkish provinces were assigned to the military administration of Austria-Hungary. He was also a member of the staff during the insurrection in Dalmatia, in 1882. Then, until 1888, he was professor of tactics in the military academy, in Vienna. He was Chief of the General Staff from 1906 to 1911 and again in 1912. During the early part of the European war he took a prominent part in the operations of the Austrian armies.

HOFER, ANDREAS (huh'fer), a Tyrolese patriot; born in St. Leonard, in the valley of Passeyr, in 1767. When the Tyrol, long a part of the Austrian dominions, was given by the treaty of Presburg to the King of Bavaria, then the ally of Napoleon, the Tyrolese revolted, and Andreas Hofer became their leader. Within a week from the outbreak of the insurrection, early in April, 1809, the Bavarian forces were everywhere defeated and the Tyrol freed. Three French armies then invaded the province, and after temporary success on their part, Hofer won the victory of Innspruck, and again freed his country. By the armistice of Znaim, agreed to after the victory of Napoleon at Wagram, the Austrians were compelled to quit the Tyrol. A second French invasion ended in defeat, and the people were a third time freed. For a few weeks Hofer was, virtually, sovereign of his country; but on the renewed invasion of French and Bavarians, he was betrayed to his enemies, condemned by a court-martial at Mantua, and shot Feb. 20, 1810.

HOFFMAN, CHARLES FENNO, an American poet and novelist; born in New York City, in 1806. He was originally a lawyer. He founded the "Knickerbocker Magazine," edited the "Literary World," and was owner and editor of the "American Magazine." His finest work was his songs, the best known being "Sparkling and Bright," and "The Myrtle and Steel." He wrote the novel "Greyslaer" (1840). His complete poetical works appeared in 1874. He died in Harrisburg, Pa., June 7, 1884.

HOFFMAN, EUGENE AUGUSTUS, an American clergyman; born in New York City in 1829. He was educated at Rutgers and Harvard colleges and the General Theological Seminary. After serving as rector in several churches in New York and Pennsylvania he was in 1879 appointed dean of the General Theological Seminary in New York. He was a man of great wealth and bestowed a large part of this on the seminary. His writings include "Free Churches" (1858); "The Eucharistic Week" (1893). He died in 1902.

HOFFMAN, FREDERICK LUDWIG, an American statistician, born in Varel, north Germany in 1865. He was educated in the common and private schools in Germany. He removed to the United States and became statistician for the Prudential Insurance Co. of America

in 1891. He was employed as statistician by many organizations and made important researches in ethnology and kindred subjects. He was the author of "The Race Traits and Tendencies of the American Negro" (1896); "Fatal Accidents in Coal Mining" (1910); "Mortality from Cancer Throughout the World" (1915); "Mortality from Respiratory Diseases in Dusty Trades" (1917).

HOFFMAN, or **HOFFMANN**, the name of several Germans distinguished for their medical knowledge. MORITZ HOFFMANN, a German scientist; born in Fürstenwalde, Brandenburg, in 1621; settled at Altorf, where he held the professorships of anatomy, botany, and physic; was the discoverer of the pancreatic duct; died in 1698. FRIEDRICH HOFFMAN, a German physician; born in Halle, Saxony, 1660. He studied and lectured at Jena, and afterward practiced at Minden. On the establishment of the University of Halle, he was appointed primary professor of medicine and natural philosophy; and thrice held the situation of rector. He was elected a member of various scientific associations in London, Berlin, and St. Petersburg; and appointed physician to the King of Prussia. His works include "System of Rational Medicine" and "Consultary Medicine." He died in 1742.

HOFFMANN, AUGUST HEINRICH (hof'män), commonly called HOFFMANN VON FALLERSLEBEN, a German philologist; born in Fallersleben, Lüneburg, April 2, 1798. He was destined for theology, but devoted himself to philological studies. In 1830 he was appointed Professor of German Literature, but the publication of his "Unpolitical Songs" (1840–1841), in spite of their innocent title, led to his dismissal. For several years afterward he wandered through Europe till restored to favor in 1848. His own "Poems" (1834); "German Street Songs" (1843); "Soldier Songs" (1851–1852); etc., are characterized by genuine simplicity and pathos; and his other publications—"Belgian Hours" (1830–1852); "Foundations for the History of the German Language and Literature" (1830–1837); "History of German Church Hymn" (1832), are of great philological value. He died Jan. 19, 1874.

HOFFMANN, ERNST THEODOR WILHELM, a German novelist and miscellaneous writer; born in Königsberg, in 1776. He studied law, and held various judicial appointments in Poland, till his legal career was interrupted by the invasion of Warsaw by the French, in 1816, in the government of which city he had been appointed counsellor. He devoted his leisure time to the study of music and romance writing. Among his works are "Fantasy Pieces," "The Devil's Elixir," "The Entail," "The Adversary," etc., all displaying a singularly wild and romantic imagination. He died in 1882.

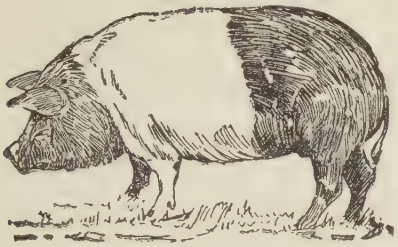
HOFMANN, AUGUST WILHELM, a German chemist; born in Giessen, April 8, 1818. After obtaining the degree of doctor of philosophy, he became assistant to Liebig in the laboratory at Giessen. It was in the course of researches that from coal-products he obtained aniline. His "Introduction to Modern Chemistry" led to great reforms in the teaching of chemistry. He died May 5, 1892.

HOFMANN, JOSEF, a famous Polish musician; born in Cracow in 1877, but at present residing in America. After studying with his father, a celebrated musician of Warsaw, and with Rubinstein, he made his début as a pianist

JOSEF HOFMANN

when but six years of age, and proved himself one of the most celebrated of musical prodigies. When he was ten years old, having already toured Europe, he came to America. Returning to Europe he lived in retirement until 1894 when he again toured the Continent and the United States. No living pianist is his superior, and he is equally at home in classic, romantic or modern music.

HOG, in zoölogy, *Sus scrofa*. It has two large teeth or tusks in the upper, and two in the lower, jaw. The body is



HAMPSHIRE HOG

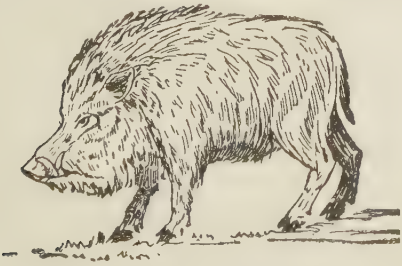
covered with bristles. When wild it is of a dark brindled hue, with soft short

POLAND-CHINA BOAR

hairs beneath its bristles. In domestication the ears become long, sharp-

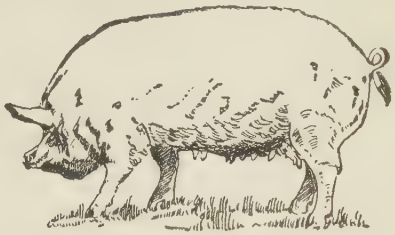
THE BABIROUSSA-EAST INDIA WILD HOG

pointed, and pendent. The hog when wild feeds on beech-mast, chestnuts,



WILD BOAR

acorns, crabs, haws, sloes, hips, grass, and roots. There are many breeds of hogs, as the Chinese, the Suffolk, the Berkshire, the Shropshire, the Northampton, the Neapolitan, etc. The point aimed at, is to make the animal quickly increase in flesh without increasing in bone. Their period of gestation is about four months; they begin to breed at the



YORKSHIRE SOW

age of 18 months to two years, do so twice in a year, and bring forth from 5 to 10, or more, at a time. The hog is wild in Continental Europe, many parts of Asia, and in north Africa. The horned hog, or babiroussa, is a native of the Indian archipelago. Its upper tusks are very long and curve backward. It has long legs and the flesh is good eating.

HOGARTH, DAVID GEORGE, an English archæologist; born at Barton-on-Humber in 1862. He was educated at Magdalen College, Oxford, and from 1886 to 1893 was tutor at that college. He traveled extensively in Asia Minor and excavated many historic sites in that region and in Egypt. He was director of the British School at Athens from 1897 to 1900 and in 1909 was appointed keeper of the Ashmolean Museum at Oxford. His published writings include "A Wandering Scholar in the Levant" (1896); "The Nearer East" (1902); "Ionia and the East" (1909); "Accidents of an Antiquary's Life" (1910).

HOGARTH, WILLIAM, an English artist and humorist; born in London in 1697. He was apprenticed at an early age to a silversmith, but at the expiration of his term, in 1718, he took to engraving in copper. In 1730 he married the only daughter of Sir James Thornhill, against her father's consent, and set up for himself as a portrait-painter with considerable success. Hogarth now commenced his remarkable series of satirical painting reflecting on the social abuses of his time: viz., the "Harlot's Progress" (1734); the "Rake's Progress' (1735); and the "Marriage à la Mode" (1745). In 1753 he appeared as the author of "Analysis of Beauty,

written with a View of Fixing the Fluctuating Ideas of Taste." In 1757 he was appointed sergeant-painter to the king. He died in London, Oct. 26, 1764.

HOG CHOLERA, also known as Swine Fever, a malady affecting hogs, of which the chief symptoms include excessive diarrhœa, purple coloring of the skin, lack of appetite, general irritation and inactivity. The virus has been located and is filterable, and is usually conveyed by the water supply. The seat of the disease is in the lungs and intestines and there is much inflammation. The percentage of loss from this disease is very large.

There are different varieties of the disease, and two kindred maladies, hog cholera and swine plague, often set up a complication in the same hog. Physicians, however, have differentiated between the two, the former usually attacking the intestines, and the latter usually attacking the lungs. The principal symptom in hog cholera is in the discoloration of the skin; in the other the animal usually suffers from a continual cough. Very often the disease cannot be correctly diagnosed till after death, when the character is indicated by the lesions in the lungs, the intestinal canal or abdominal lymph glands.

The disease is contagious and the methods of counteracting it when it affects a herd have to be drastic. The affected hogs have to be segregated, and the pens and surroundings in which they have been confined have to be burnt. Even the ground has to be put into disuse, and the bacilli must be destroyed by putting it into a state of cultivation if it is intended again to use it as a hog yard. The water has to be carefully examined, and the pens kept clean and occasionally whitewashed.

Just as there are varieties in the malady so there are degrees in its virulence. In serious cases the hog may die at the end of a couple of days. In a less serious case the animal may continue sick for a period of about five weeks. Hogs have been successfully immunized. The most successful method has been to inject the immune serum into one side and blood from a hog sick with the malady into the other. Tonics containing sodium salts and sulphur have also had good effects.

HOGEN-MOGEN (hōg′en-mōg′en), a sobriquet for Holland, a corruption of *Hooge en Mogendé* ("High and Mighty"), the Dutch term of address to their States-General.

HOGG, JAMES, a Scotch poet; born in Selkirkshire in 1770. After receiving a very scanty education, he began to earn his bread by daily labor as a shepherd. His early rhymings brought him under the notice of Sir Walter Scott, by whose advice he published a volume of ballads, "The Mountain Bard." He published the "Forest Minstrel" (1810), and the "Queen's Wake" in 1813, which established his reputation as a poet. In 1815 he published his "Pilgrims of the Sun," followed by "Mador of the Moor," "Queen Hynde," and "Dramatic Tales." He died in Altrive, on the Yarrow, in 1835.

HOGMANAY (ho-man-ā′ or hog′-men-ē), a name applied in Scotland to the last day of the year, Dec. 31, often celebrated with holiday festivities in connection with the New-year's Day.

HOG-PLUM, the popular name of the plants belonging to the genus *Spondias*, order *Anacardiaceæ*. Some of the species yield pleasant fruits, as *S. purpurea* and *S. lutea* of the West Indies, the species generally called hog-plum, because their fruit is a common food for hogs.

HOG-RAT, a genus (*Capromys*) of rodent animals, family *Muridæ* (mice), different species of which, including the musk-cavy, are found in the West Indies.

HOG'S FENNEL, the umbelliferous genus *Peucedanum*, more particularly *P. officinale*, a plant found, but very rarely, in salt marshes. The root yields a stimulant resin; the plant has an odor of sulphur. Called also common or sea sulphurwort or harestrong.

HOGSHEAD, in the United States a butt, a cask containing from 100 to 140 gallons. Also a measure of capacity containing 63 wine gallons, or 52½ imperial gallons.

HOHENBERG, DUCHESS SOPHIE OF, morganatic wife of Francis Ferdinand, Archduke of Austria, and heir to the throne, born in Stuttgart, and before her marriage known as the Countess Chotek. She was the mother of the Princess Sophie and the Princes Maximilian Charles (born in 1902) and Ernst (born in 1904), who were excluded from the succession on account of the nature of the marriage of which they were the result. The Duchess, while on a visit to Serajevo, in June, 1914, together with her husband, the Archduke, was with him assassinated by a Serbian revolutionary conspirator, the murder serving as the pretext for the opening of hostilities in the World War.

HOHENLINDEN (hō″en-lin″den), a village of Bavaria on the Iser, near

Ebersburg, and 33 miles E. of Munich. Here in 1800 the French, under Moreau, defeated the Austrians commanded by the Archduke John, which event brought about the peace of Lunéville.

HOHENLOHE-SCHILLINGSFÜRST, CLOVIS KARL VICTOR, PRINCE VON (hō″en-lō″uh-shēl″ēngs-fŏrst), German statesman; born March 31, 1819. After studying at Heidelberg he entered the public service, becoming in 1866 Prime Minister of Bavaria. In 1874 he was chosen to succeed Count Arnim as the German ambassador to France, and held the post till 1885, when he became governor-general of Alsace-Lorraine. When the crisis which resulted in the resignation of Count Caprivi and Count Eulenburg arose, in 1894, he was appointed Chancellor. He resigned in 1900. He married Princess Sayn-Wittgenstein, a daughter of a famous Russian general. Died in 1901.

HOHENSCHWANGAU (ho″en-shväng″ou), a royal castle in Bavaria, 55 miles from Munich, near the right bank of the Lech, 2,933 feet above sea level. It was purchased in 1832 by the crown-prince Maximilian of Bavaria, who restored it in the style of a magnificent mediæval feudal castle.

HOHENSTAUFFEN (hō-en-stou′fen), a German family, founded by Frederick von Büren, who lived about 1040. His son fought valiantly under the Emperor Henry IV. in the battle of Merseburg, in 1080, and received the hand of the emperor's daughter Agnes, together with the dukedom of Suabia, in 1081. Conrad, his grandson, was elected Emperor of Germany, Feb. 22, 1138. Conrad III. was succeeded as emperor by his nephew, Frederick I., surnamed Barbarossa, 1152–1190; and the imperial throne was occupied by his son and grandson till 1254. The sole and last survivor of the Hohenstauffen race, Conradin, tried to regain the family heritage; but defeated in the battles of Benevento, Feb. 26, 1266, and of Tagliacozzo, Aug. 23, 1268, he was made prisoner and beheaded at Naples, Oct. 29, 1268.

HOHENZOLLERN (hō-en-tsol′urn), a small territory of Germany, since 1852 an administrative division of Prussia. It consists of a long, narrow, irregular strip of country, entirely surrounded by Württemberg and Baden. Area, 441 square miles. Pop. (1910) 71,611. The princely family of Hohenzollern dates from Thassilo, Count of Zollern, who died about A. D. 800. There have been several lines and branches, the main one being the family of which the ex-Emperor Wilhelm II., now an exile in Holland, is the head.

HOKUSAI, a celebrated Japanese artist. Born in Tokyo in 1760 he left home at the age of 13 and worked in an engraver's shop for five years when he left to study designing with one of the famous Japanese artists. Losing his position because of his original work which was displeasing to his master, he tried illustrating and later peddling without much success. It was 1810 before he can be said to have made a success of his art. In that year he opened a school and soon had more pupils than he could accommodate. His greatest work was his "Ten Thousand Sketches," which appeared in 1836. His work was popular in the best sense of that word and free from the conventionality that characterized his contemporaries. He died in 1849.

HOLACANTHUS (hol-ä-kan′thus), a genus of fishes, in character and distribution similar to the *Chætodon.* They are remarkable for the great beauty and symmetry of their colors, and for their excellence as articles of food. The body is compressed, and the gill-cover bears a strong spine. One of the best known of the 40 species, called Emperor of Japan by the Dutch, is *H. imperator,* one of the most esteemed fishes of the East Indies, rivalling the salmon in flavor. Its greatest size is about 15 inches long; its color is deep blue, with numerous narrow bands of orange, the pectoral fins black, the tail bright yellow. In beauty it is rivalled by an allied species, *H. diacanthus,* of similar distribution.

HOLADIN, an extract of the pancreas, used in medicine for the treatment of indigestion. Its properties are similar to those of the pancreatic juice, and it acts upon starch, protein and fat in such a manner as to render them easily digestible. It is generally administered in the form of capsules.

HOLBACH, PAUL HEINRICH DIETRICH, BARON VON, a French philosopher; born in Heidelsheim, in the Palatinate, in 1723. He inherited great wealth from his father, and entertained in his elegant house Rousseau, Diderot, and Buffon. He held materialistic and atheistic views, which are expounded in "Christianity Unveiled" (1767); "Spirit of the Clergy" (1767); "Sacerdotal Imposture" (1767); "The System of Nature" (1770); "The Social System" (1773). He died in 1789.

HOLBEIN, HANS, or **JOHANN** (hol′bīn), a German painter; born in Augsburg about 1495. He learned the

elements of his art from his father. His talent procured him the friendship of Erasmus, at whose recommendation he went to England, and was employed first by Sir Thomas More, who introduced him to Henry VIII. He rose to the zenith of fortune in that monarch's court, and painted a great number of portraits which are still considered masterpieces of art. His masterpiece is perhaps the "Family of the Burgomaster Meyer," Gallery of Dresden. Holbein designed the celebrated series known as the "Dance of Death," cut in wood and first published at Lyons in 1538. He died of the plague in 1543.

HOLCUS, a genus of grasses (order *Gramineæ*), extremely common in some pastures, where they are called soft grasses. *H. saccharatus* contains a large quantity of sugar, and *H. odoratus* is celebrated for its fragrance. There are only two species native to Great Britain, woolly soft grass or meadow soft grass (*H. lanatus*) and creeping-rooted soft grass (*H. mollis*). *H. lanatus* is the only North American species.

HOLD, the whole interior cavity or belly of a ship, or all that part of her inside which is comprehended between the floor and the lower deck throughout her length.

HOLDEN, EDWARD SINGLETON, an American astronomer; born in St. Louis, Mo., Nov. 5, 1846; was graduated at Washington University in 1866; and at the United States Military Academy in 1870; Professor of Mathematics at the Naval Academy in 1873–1881; president of the University of California in 1885–1888; director of the Lick Observatory in 1888–1898; he was then appointed astronomer of the Smithsonian Institution. His publications include "Astronomy for Students" (with Simon Newcomb); "Monograph of the Central Parts of the Nebula of Orion"; "Astronomical Bibliography"; "Handbook of Lick Observatory"; "Essays in Astronomy" (1900); "The Sciences" (1903); "Galileo" (1905). He died in 1914.

HOLDEN, CHARLES FREDERICK, an American naturalist; born in Lynn, Mass., 1851. He was assistant at the American Museum of Natural History, New York, from 1870 to 1877. He wrote: "Marvels of Animal Life"; "Wonder Wings"; "A Frozen Dragon, and Other Tales," a natural-history story-book for young people; "Life of Agassiz"; "Big Game at Sea"; "Game Fishes of the World" (1911); "The Ocean" (1913); "Angling Adventures Around the World" (1914). He died in 1915.

HOLDING, the term in Scots law used to denote the manner in which heritable estate is holden, and corresponding to tenure in English law.

HOLE, SAMUEL REYNOLDS, an English clergyman; born Dec. 5, 1819. He became canon of Lincoln in 1875, and in 1887 Dean of Rochester. He did much to promote the influence of the Church of England as the Church of the poor, and advocated the principles of the Free and Open Church Association. As a lecturer he was well known to American audiences. Among his works are: "A Little Tour in Ireland" (1858); "A Book About Roses" (1869); "Nice and Her Neighbors" (1881); "Memories of Dean Hole" (1892). He died Aug. 27, 1904.

HOLIGARNA (hō-lē-gar'na), a genus of plants, order *Anacardiaceæ*. The fruits of the species *H. longifolia*, with those of another plant of the same order, furnish the black varnish of Sylhet, which is much used in India for lacquer work.

HOLINSHED, RAPHAEL RALPH (hol'in-shed), an English chronicler, in the age of Queen Elizabeth. He is best known by his "Chronicles of Englande, Scotlande, and Irelande," the first edition of which, known as the "Shakespeare edition," because it is the one which the dramatist is supposed to have used in collecting material for his historical plays, published in London in 1577. He died about 1580.

HOLKAR (hōl'kar), the name of a powerful Mahratta family, the members of which have at various times been formidable enemies to the British Empire in India. The founder of the family was Mulhar Rao Holkar, born in the Deccan, 1693.

HOLLAND. See NETHERLANDS, THE.

HOLLAND, a city in Ottawa co., Mich., at the mouth of the Black river, on Lake Michigan, and on the Père Marquette railroad, 25 miles S. W. of Grand Rapids. It is the seat of Hope College and the Western Theological Seminary, both institutions of the American Reformed Church, and has steamship connections with Chicago and other lake ports. It has manufactures of furniture, leather, pianos, laundry baskets, etc., daily and weekly newspapers, electric lights and State banks. Pop. (1910) 10,490; (1920) 12,183.

HOLLAND, or **PARTS OF HOLLAND**, a district of England, one of the three portions into which the county of Lincoln is divided. It occupies the S. E. part of the county round the Wash, and consists almost entirely of low, marsh, and fen land.

HOLLAND, a fine and close kind of linen, so called from its first being manufactured in Holland; also a coarser linen fabric, unbleached or dyed brown, used for covering furniture, carpets, etc., or for making window-blinds or the like.

HOLLAND, NEW, the name formerly given to the island or continent of Australia.

HOLLAND, HENRY RICHARD VASSALL FOX, LORD, an English publicist; born in 1773. He succeeded to the peerage by the death of his father when less than one year old. In 1798 he took his place in the House of Lords, and as the nephew of Charles James Fox, was at once acknowledged as a Whig leader. In 1806 he was commissioner for settling disputes with the United States; lord privy seal in 1806–1807; and chancellor of the duchy of Lancaster. He made Holland House the resort of the wit, talent, and beauty of his day. He died in 1840.

HOLLAND, SIR HENRY, an English physician; born in Knutsford, Cheshire, Oct. 27, 1788. He wrote "Travels in Albania," "Thessaly"; settled in London in 1816, and soon became a leader in his profession. In 1828 he was elected a Fellow of the Royal College of Physicians; in 1840 he was appointed physician-in-ordinary to the prince consort, and in 1852 physician-in-ordinary to the queen. His "Medical Notes and Reflections" was published in 1839. He died in London, Oct. 27, 1873.

HOLLAND, JOHN P., an Irish-American submarine inventor. He was born at Liseannor, Ireland, and received his preliminary education at the Limerick Christian Brothers' School. After private study he became a school teacher, remaining in that occupation for about ten years in Ireland and continuing in it in New Jersey, after he came to America. He had an engineering turn of mind, and the threatening possibilities of a war between the United States and Great Britain suggested to him the idea of an undersea boat that might aid in destroying the British navy. His incessant experiments in this direction resulted in plans for a submarine torpedo boat, which he laid before the U. S. government in 1875. His first vessel was of wood, and was only a partial success, but his boat, the "Holland," built at Elizabeth, N. J., proved successful and in 1898 was purchased by the government. Before he died his idea was developed, but little lucrative advantage came to him on that account. He died in 1914 at a time when his invention was about to win signal results in the European war.

HOLLAND, JOSIAH GILBERT, an American author; born in Belchertown, Mass., July 24, 1819. He was graduated at the Berkshire Medical College, at Pittsfield, in 1844. He soon abandoned his profession, however, and became assistant editor of the Springfield "Republican." In 1870 Mr. Holland removed to New York, where he founded "Scribner's Monthly," which he conducted successfully till his death, Oct. 12, 1881. In this magazine appeared his novels, "Arthur Bonnicastle" (1873); "The Story of Sevenoaks" (1875); and "Nicholas Minturn" (1876). His "Timothy Titcomb's Letters" (1858) had a large circulation only exceeded by his "Life of Lincoln." His most popular poems are "Bitter Sweet" (1858); "Kathrina" (1867); and "The Mistress of the Manse" (1874).

HOLLAND, THOMAS ERSKINE, an English jurist; born in Brighton, July 17, 1835. He was educated at Oxford; was called to the bar in 1863; and in 1874 was elected Chicele Professor of International Law. His monumental work is "The Elements of Jurisprudence" (1880). Among his other publications the most notable are: "An Essay on Composition Deeds" (1864); "The Institutes of Justinian" (1873); "The European Concert in the Eastern Question" (1885); "A Manual of Naval Prize Law" (1888); and "Studies in International Law" (1898).

HOLLAND, WILLIAM J(ACOB), an American zoölogist born in Jamaica, West Indies, in 1848. He graduated from the Moravian College and Theological Seminary at Bethlehem, Pa., in 1867, and from Amherst College in 1869. He studied also at Princeton Theological Seminary. After serving as principal in several high schools in Massachusetts he became a Moravian minister and was pastor in Philadelphia and Pittsburgh. From 1891 to 1901 he was chancellor of the Western University of Pennsylvania (now the University of Pittsburgh). In 1898 he became director of the Carnegie Institute at Pittsburgh. He served as naturalist in several expeditions. He

was a member of many scientific societies both in the United States and in foreign countries. His published readings include "The Butterfly Book" (1898); "To the River Platte and Back" (1913); "The Butterfly Guide" (1915). He also published many scientific papers. He was the editor of "Annals" and "Memoirs" of the Carnegie Museum.

HOLLANDER, JACOB HARRY, an American economist; born in Baltimore in 1871. He graduated from Johns Hopkins University in 1891 and was associate professor of finance at that institution until 1900, when he became assistant professor of political economy. In 1904 he was appointed full professor in this subject. He was secretary of the Bimetallic Commission in 1897. While engaged in financial work in Porto Rico he was appointed treasurer of that island by President McKinley. After introducing a successful tax system, he resigned in 1901. He was special commissioner to investigate financial conditions in San Domingo and until 1908 was financial advisor of the Dominican Republic. He published much on economic subjects. His writings include "A Study in Municipal Activity" (1894); "David Ricardo" (1911); "The Abolition of Poverty" (1914).

HOLLES, DENZIL, LORD (hōlz), an English patriot; born in Houghton, Nottinghamshire, in 1599. He entered Parliament in 1624, and at once joined the party opposed to the king's government. He was one of the members of Parliament whom Charles accused of high treason and attempted to arrest in 1642. He was a foremost leader of the Presbyterian party. For having in 1647 proposed to disband the army he was accused of high treason and fled to Normandy. After Cromwell's death, Holles set to work to effect the restoration of the Stuarts; he carried the invitation of recall to Charles at Breda. In 1661 he was created Lord Holles of Isfield. He negotiated the treaty of Breda in 1667. He died Feb. 17, 1680.

HOLLEY, ALEXANDER LYMAN, an American metallurgist; born in Lakeville, Conn., July 20, 1832; was graduated at Brown University in 1853. About 1863 he went to England and purchased for Corning, Winslow & Co. the Bessemer patents for the manufacture of steel. The first Bessemer works were built by him in Troy, N. Y., in 1865, and the second plant in Harrisburg, Pa., in 1867. He was Lecturer on the Manufacture of Iron and Steel at Columbia University in 1879–1882. Holley secured about 16 patents, of which the most important was probably that for the detached converter-shell, an improvement in the Bessemer process. His publications include "The Permanent Way and Coal-burning Locomotives of European Railways, with a Comparison of the Working Economy of European and American Lines (1858); "American and European Railway Practice" (1860); "A Treatise on Ordnance and Armor" (1865); etc. He died in Brooklyn, N. Y., Jan. 29, 1882. A colossal bronze bust of him has been placed in Washington Square Park, New York City, as a testimonial from the mechanical engineers of the United States and Europe.

HOLLEY, MARIETTA, an American author; born in Ellisburg, N. Y., in 1844. The most noted of her works are: "My Opinions and Betsey Bobbet's," and "Josiah Allen's Wife." "Samantha at Saratoga" (1887) was followed by the adventures of this character in Europe, at the Exposition, among Colored Folk, etc. "Poems" (1886); "Samantha on Women's Rights" (1913); "Josiah Allen on Women's Rights" (1914).

HOLLINGSHEAD, JOHN, an English journalist; born in Hoxton, Sept. 9, 1827. He was a constant contributor to "Household Words," "All the Year Round," etc. In 1868 he became lessee and manager of the Gaiety Theater. His works include: "Under Bow Bells"; "Rubbing the Gilt Off"; "Ragged London"; "Miscellanies: Stories and Essays"; "Footlights." Died in 1904.

HOLLIS, HENRY FRENCH, United States senator from New Hampshire, born in Concord, N. H., in 1869. He graduated from Harvard in 1892 and after studying law was admitted to the bar in 1893. He practiced at Concord until his election to the Senate in 1913. He was the first Democratic senator elected from New Hampshire since 1852. His term expired in 1919.

HOLLIS, IRA NELSON, an American engineer and educator, born at Mooresville, Ind., in 1856. He graduated from the United States Naval Academy in 1878. After serving in the navy as engineer he resigned in 1893, on his election as professor of engineering at Harvard University. In 1913 he became president of the Worcester Polytechnic Institute. He received honorary degrees from several colleges and was a member of many scientific societies. His published writings include "War College Lectures on Naval Ships" (1892); and "A History of the Frigate Constitution" (1900).

HOLLOW WARE, the trade term for all kinds of vessels made of cast or wrought iron, and used for cooking and other purposes.

HOLLY, in botany, *Ilex aquifolium*, a shrub or small tree, 10 to 40 feet high, with glossy leaves. Wild in Europe and Western Asia. The beautiful white wood of the holly is valued by cabinet-makers for inlaying, the bark is used in the manufacture of birdlime, the berries are so violently emetic that six or eight will excite violent vomit; the leaves are said to be equal to Peruvian bark for the cure of intermittent fevers. The root and bark are said to be emollient, resolvent, expectorant, and diuretic. The leaves and berries form, with ivy, the principal material of Christmas decoration.

HOLLYHOCK, a biennial plant (*Althæa rosea*), order *Malvaceæ*. It is a native of China and is a frequent ornament of gardens. There are many varieties, with single and double flowers, characterized by the tints of yellow, red, purple, and dark purple approaching to black. It reaches a height of eight feet or more.

HOLLY OAK, in botany, *Quercus ilex*, called also the holy oak or common evergreen oak. It is found in the S. of Europe, in the vicinity of the sea, with leaves varying in form, some of them prickly, others entire on the margins. It does not form forests. Its wood is good, but very hard and heavy.

HOLMES, (ELIAS) BURTON, an American traveler and lecturer; born in Chicago in 1870. He received an academic education. In 1890 he delivered his first lecture in Chicago, which was followed by a series of lectures on travel. He visited many times practically every civilized country in the world, gathering material for his lectures. Moving pictures taken by him became one of the most prominent features in the moving picture theaters in the country.

HOLMES, JOHN HAYNES, an American clergyman and writer; born in Philadelphia in 1879. He graduated from Harvard University in 1902 and from Harvard Divinity School in 1904. After serving as pastor in Dorchester, Mass. he succeeded Minot J. Savage as pastor of the Church of the Messiah, New York City. He wrote much on theological and economical subjects. Following the entrance of the United States into the war his writings in favor of pacifism were severely criticized. He wrote "The Revolutionary Function of the Modern Church" (1912); "Marriage and Divorce" (1913).

HOLMES, JOSEPH AUSTIN, American geologist; born in Laurens, S. C., in 1859. He graduated from Cornell University in 1881 and from that year until 1891 was professor of geology at the University of North Carolina. He was geologist of that State from 1891 to 1904. From 1904 to 1907 he was in charge of the Geological Survey laboratories for testing fuels and structural materials at St. Louis, Mo. When the Bureau of Mines was organized in 1910 he was appointed director and held that position until his death in 1915.

HOLMES, MRS. MARY JANE (HAWES), an American novelist; born in Brookfield, Mass. A voluminous writer, her works are mostly domestic in character, and have had a large circulation. Among them are: "Tempest and Sunshine" (1854); "Lena Rivers" (1856); "Marian Grey" (1863); "Millbank" (1871); "Queenie Hetherton" (1883); etc. She died Oct. 7, 1907.

HOLMES, OLIVER WENDELL, an American author; born in Cambridge, Mass., Aug. 29, 1809. He was graduated at Harvard. He began the study of law, but in a short time relinquished it for that of medicine. In 1839 he became Professor of Anatomy and

OLIVER WENDELL HOLMES

Physiology in Dartmouth College, N. H., but resigned to devote himself to practice in Boston. In 1847 he was appointed to the chair of anatomy at Harvard. He wrote voluminously both in prose and verse. His chief works, besides several volumes of poems and treatises on medicine, are: "The Autocrat of the Breakfast Table"; "The Professor at the Breakfast Table"; and "The Poet at the Breakfast Table"; "Elsie Venner"; "The Guardian Angel"; "A Mortal Antipathy"; and memoirs of Motley and Emerson. He died Oct. 7, 1894.

HOLMES, OLIVER WENDELL, JR., an American jurist; son of Dr. Oliver W. Holmes; born in Boston, Mass., March 8, 1841; was graduated at Harvard College in 1861; served three years in Massachusetts Volunteers in the Civil War, being wounded three times, at Antietam, Marye's Hill, and Fredericksburg; practiced in Boston, Mass.; became Professor of Law in Harvard Law School, 1882; associate justice of Massachusetts Supreme Court, 1882–1899; chief-justice, Aug. 2, 1899; Justice of the U. S. Supreme Court, 1902; wrote "The Common Law" (1881); "Speeches"; etc.; and edited "Kent's Commentaries."

HOLM OAK, *Quercus Ilex*, a shrublike tree, native of the Mediterranean countries, with holly-like leaves. In its native countries it attains a considerable size and age, but in Great Britain it forms an ornamental evergreen bush of from 20 to 30 feet high, seldom becoming single-stemmed.

HOLOCAINE, p-diethoxy-diphenyl-ethenyl-amidine, a synthetic drug, used in eye practice, as a local anæsthetic. Sometimes known as Phenacaine.

HOLOCAUST (hol'ō-câst), a sacrifice, the whole of which was consumed by fire, nothing being retained; such sacrifices were practiced by the Jews. The word is now sometimes applied to a general sacrifice of life or slaughter.

HOLOGRAPH, any writing, as a letter, deed, or will, wholly written by the person from whom it bears to proceed. In Scots law a holograph deed is valid without the signatures of witnesses, but in English law every deed, whether holograph or not, must have the names of two witnesses attached to it to render it valid.

HOLOPTYCHIUS (hol-op-tik'ē-us), an extinct genus of ganoid fishes from Devonian and Carboniferous strata, type of a family the members of which are remarkable for their sculptured or wrinkled scales and extraordinary labyrinthine tooth structure.

HOLST, HERMANN EDUARD VON, a German-American historian; born in Fellin, Livonia, Russia, June 19, 1841. Coming to the United States in 1866, he engaged in literary work and lecturing; he returned to Europe, becoming professor in the universities of Strassburg (1872) and Freiburg (1874); appointed professor in the University of Chicago (1892). He has written: "Constitutional and Political History of the United States"; "Lives" of John C. Calhoun and John Brown; "Constitutional Law of the United States"; "The French Revolution Tested by Mirabeau's Career"; etc. He died Jan. 20, 1904.

HOLSTEIN (hōl'stīn), a duchy of Germany, formerly belonging to Denmark, and now an appanage of the kingdom of Prussia. By decree of Jan. 1, 1869, the duchy of Holstein was united to the duchy of Schleswig, to form the province of Schleswig-Holstein. By the terms of the Peace Treaty of 1919 Denmark regained, through a plebiscite, that northern part of Schleswig-Holstein principally inhabitated by Danes.

HOLSTEIN, a princely German family, which includes the royal line of Denmark, the collateral branches of Holstein-Sonderburg-Augustenburg, and the ducal race of Holstein-Gottorp.

HOLSTON, a river which rises in Wythe co., Va., and flowing a tortuous S. W. course through Smythe and Washington counties, enters Tennessee between Hawkins and Powell counties. Thence traversing Granger, Jefferson, and Knox counties, it unites with the Clinch river at Kingston in Roane co., to form the Tennessee river; length, about 200 miles.

HOLT, HAMILTON, an American editor; born in Brooklyn, in 1872. He graduated from Yale University in 1894. He took post-graduate courses at Columbia. From 1897 to 1913 he was managing editor of the "Independent" and was editor and owner of that publication after 1913. He lectured much on economic subjects in the United States and in foreign countries. He was special lecturer of the World Peace Foundation and was Bromley lecturer on journalism at Yale University in 1917. His published writings include "Undistinguished Americans" (1906); and "Commercialism and Journalism" (1909).

HOLT, HENRY, an American author and publisher; born in Baltimore in 1840. He graduated from Yale University in

1862 and afterward studied law at Columbia. He began the publishing business with G. P. Putnam in 1863, and ten years later founded the publishing company of Henry Holt & Co. He was a member of the first executive committee on Simplified Spelling. He wrote several novels, including "Calmire-Man and Nature" (1892); "Sturmsee—Man and Man" (1905). He took great interest in psychic questions and published in 1914 "On the Cosmic Relations." In the same year he founded and became editor of the "Unpopular Review."

HOLT, LUTHER EMMETT, an American physician; born in Webster, N. Y., in 1855. He graduated from the University of Rochester in 1875 and from the College of Physicians and Surgeons in New York, in 1880. He served as Professor of Diseases of Children in several New York hospitals. He became widely known as a writer of books on the care of diseases of children. These include "The Care and Feeding of Children" (1894); "Diseases of Infancy and Childhood" (1902).

HOLT, WINIFRED, an American sculptor. She was born in New York and was educated at private schools and Brearley School, New York. She studied anatomy, drawing and sculpture at Florence, and elsewhere. She has exhibited at the National Sculpture Society, and Architectural League, New York, and at Berlin. Her chief commissions have been portraits, busts, and bas-reliefs. She founded the New York Association for the Blind, and through her efforts many branches of the Association have been opened. She organized, in 1915, the Phare de Bordeaux, the first lighthouse for the blind on the continent, and also the Phare de France, opened by the French President in 1916. During the European war she was president of the Comité Franco-Americain pour les Aveugles de la Guerre. Her books include "Life of Henry Fawcett"; "Beacon for the Blind."

HOLY ALLIANCE, a league concluded at Paris, Sept. 26, 1815, between Alexander I., Emperor of Russia, Francis of Austria, and Frederick William III. of Prussia, and signed with their own hands, and without the countersign of a minister. Despite a declaration of its high and holy purpose, its aim was to maintain the power and influence of the existing dynasties, to uphold absolute monarchy, and suppress republican movements. Indications that the purposes of the Holy Alliance were likely to be extended to the small republics of South America gave origin to the MONROE DOCTRINE (*q. v.*). It was offered for signature to all the European Powers except the Pope and Sultan of Turkey, and accepted by all except Great Britain. The events of 1848 broke up the Holy Alliance.

HOLY CITY, an appellation given by different peoples to that particular city whence proceed all their religious traditions and worship. By Jew and Christian Jerusalem is so named; by Catholics, Rome; by Mohammedans, Damascus, Mecca, and Medina; by the Hindus, Benares; by the Mohammedans of India, Allahabad; by the ancient Incas, Cuzco.

HOLY CROSS, an order of Augustinian canons, suppressed in the 17th century. Also a religious order established in 1834 in France. The members devote themselves to education and works of mercy. Also a society consisting of clerical members of the ritualistic school of the English Church. It was founded in 1855.

HOLY CROSS COLLEGE, an educational institution in Worcester, Mass.; founded in 1843 under the auspices of the Roman Catholic Church; reported at the close of 1919: Professors and instructors, 50; students, 625; volumes in the library, 45,000; president, Rev. James J. Curlin, S. J.

HOLY FAMILY, the infant Saviour, the Virgin Mary, Joseph, Elizabeth, Anna, and John the Baptist. A picture in which all or the most of the subordinate personages are introduced is called a "holy family."

HOLY FIRE, a flame at Jerusalem maintained by the Greek and Armenian priests in the Church of the Holy Sepulcher.

HOLY GHOST, the Holy Spirit; the third person in the Trinity, whom the Saviour promised to send to comfort His disciples (John xiv:, xv:, and xvi.).

HOLY GHOST, ORDER OF, an order of male and female hospitallers, founded by Guy, son of William, Count of Montpellier, toward the end of the 12th century, for the relief of the poor, the infirm and foundlings. After the middle of the 18th century it was united with the order of St. Lazarus by Clement XIII. This was also the name of the principal military order in France, instituted in 1578 by Henry III., abolished in 1789, revived at the Restoration, and again abolished in 1830.

HOLY GRASS (*Hierochloe borealis*), a sweet-smelling grass belonging to the

tribe *Phalaridex*, about a foot high, with a brownish glossy lax panicle. It is sometimes strewed on the floors of churches on festival days, whence its name.

HOLYHEAD, an island and seaport of Wales; off the W. coast of the Isle of Anglesey, with which it is connected by a long causeway which may be crossed at low water, 23 miles N. W. of Bangor. The isle is a barren rock. Holyhead has a breakwater inclosing a harbor.

HOLY ISLAND, a name for Ireland, from the number of saints in its calendar. Also Guernsey, one of the Channel Islands, because of the monks that formerly flocked thither. Also the island of Rügen, so named by Varini. Also a name now generally given to Lindisfarne, on the coast of Northumberland, where the famous St. Cuthbert ruled over a Saxon abbey founded 635. It is a peninsula insulated at high tide.

HOLY LAND, a name generally given among modern peoples to Palestine, the scene of the Christ's birth, ministry, and death. It is first applied in Zech. ii: 12. Elis, a kingdom of ancient Greece, was also so named. Here was the temple of the Olympian Zeus, and sacred games were held every four years. Arabia is so named by Mohammedans because Mohammed was born there. The Buddhists of China call India the Holy Land, because it was the country of Sakya Muni.

HOLY LEAGUE, a league, founded in 1576, to prevent Henry of Navarre, who at the time was a Protestant, from ascending the French throne. At his becoming a Roman Catholic, in 1593, the league was dissolved and he became king under the title of Henry IV. The name was also given to a combination formed in 1508 by Pope Julius II. with Louis XII. of France, Maximilian of Germany, Ferdinand III. of Spain, and some Italian princes, against Venice.

HOLYOAKE, GEORGE JACOB, an English religious reformer; born in Birmingham, April 13, 1817. He was educated at the Mechanics' Institute in his native city, and figured as teacher, journalist, and lecturer. He is chiefly known for his advocacy of secularism and co-operation. His works include: "Secularism" (1854); "The Limits of Atheism" (1861); "History of Co-operation" (1875–1879); "Among the Americans" (1881); "Co-operative Movement of Today" (1891); "Nature and Origin of Secularism" (1896); etc. He died in Brighton in 1906.

HOLY OF HOLIES, in Judaism, the inner or most sacred apartment, first to the Tabernacle, then of the Temple, into which none was permitted to enter but the high priest, and he only once a year, and then "not without blood." It was separated from the Holy Place or Outer Chamber by a veil.

HOLYOKE, a city in Hampden co., Mass., on the Connecticut river, and on the Boston and Maine, and the New York, New Haven and Hartford railroads; 8 miles N. of Springfield. It is the leading paper manufacturing city in the world, with a daily output of over 200 tons. The Connecticut at this point is dammed with a dam 1,000 feet in length, supplying water-power, through a system of canals, to the numerous turbines by which nearly all the mills are operated. The principal manufactures include paper, cotton and woolen goods, machinery, turbines, thread, knit goods, steam engines and wire. The city is lighted by gas and electricity; has waterworks, public schools, high school, public library, electric street railroads, daily and weekly newspapers, and National banks. Pop. (1910) 57,730; (1920) 60,203.

HOLYOKE COLLEGE, MOUNT. See MOUNT HOLYOKE COLLEGE.

HOLYOKE MOUNT, in Hampshire co., Mass., between Hadley and Amherst on the N. and South Hadley and Granby on the S. two miles E. of the Connecticut river, three miles S. E. of Northampton. It is a steep, narrow ridge of greenstone; highest point, 1,120 feet above the sea.

HOLY PLACES, the sites in Palestine connected with the ministry and death of Christ, especially those traditionally located within the Church of the Holy Sepulcher. The Greek and Latin Churches both claim the custody of these sacred spots, the Russians supporting the pretentions of the former, the French those of the latter. A dispute about these holy places led, in 1853, to the Russo-Turkish War, followed, in 1854, by the Crimean War.

HOLY ROMAN EMPIRE, a title which the German Empire received in 902 when Otho I. was crowned at Rome by Pope John XII. It came to an end when Francis II. became hereditary emperor of Austria in 1804.

HOLY ROOD, a cross or crucifix; especially one placed on the rood-beam in churches over the entrance to the chancel.

Holy rood day is a festival kept on

Sept. 14, in commemoration of the exaltation of the Saviour's Cross. Also called holy cross day.

HOLYROOD, a palace and abbey in Edinburgh, at the E. extremity of the old town. The abbey church, founded in 1128 by David I., containing the royal vault, with the ashes of numerous members of the Scottish royal race, is now mostly in ruin. The palace, erected in successive parts from 1501 to 1679, contains the private royal apartments, the rooms associated with the events in the reign of Mary Queen of Scots, and a gallery, in which are portraits of all the Scottish kings, most of them imaginary.

HOLY SEPULCHRE, the sepulcher in which the body of Jesus was laid between His death and His resurrection. Also the Byzantine Church, built at Jerusalem on what is by some believed to be the site of the sepulcher. The Order of the Holy Sepulcher is an order founded by Godfrey of Bouillon.

HOLY SYNOD, a council established at St. Petersburg in the former Russian Empire, to act for the Emperor, he being the earthly head of the Greek Church in Russia.

HOLY THURSDAY, in the English Church, Ascension Day; in the Roman Church the Thursday in Holy-week, Maundy-Thursday.

HOLY WATER, in the Roman Catholic Church, water which has been blessed, or consecrated, by an appropriate service, and used to sprinkle the worshipers and the things used in the church.

HOLY WEEK, or **PASSION WEEK**, the week which immediately precedes Easter, and is devoted especially to commemorate the passion of our Lord. The days more especially solemnized during it are Spy Wednesday, Maundy Thursday, Good Friday, and Holy Saturday. It is an institution of very early origin.

HOMAGE, in feudal law, a formal acknowledgment made by a feudal tenant to and in presence of his lord on receiving the investiture of a fief or coming to it by succession, that he was his vassal.

HOMBURG (hom'börg) a town of Prussia, and the former capital of the landgraviate of Hesse-Homburg; at the foot of the Taunus Mountains, 9 miles N. W. of Frankfort-on-the-Main. It has been much frequented on account of its mineral waters. Until the closing of the Casino in 1872 and the suppression of gambling it was crowded by the wealthy and pleasure-loving from all over the world. Since then it has steadily declined as a fashionable resort. Pop. about 15,000.

HOME ECONOMICS, a broad term covering all the sciences and arts pertaining to the home, formerly known as household economics, domestic economy, domestic science, etc. Like agriculture, it is a complex science, including such subjects as the chemistry of cooking, dietetics, hygiene, house decoration, clothing, sewing, etc., all subject to desultory instruction in all kinds of schools. Cooking, sewing and housekeeping were taught in the public schools of the United States as far back as 1876, and later were taken up more scientifically by a few western universities, notably in Illinois, Iowa, and Kansas. The object was especially to educate the wives or daughters of the farmers to become more proficient as homemakers by giving them a fundamental knowledge of the sciences pertaining to the home. As an instance, a knowledge of physiology soon taught the farmers that hot biscuits, cooked with a large quantity of saleratus, was the cause of much of the dyspepsia which was so prevalent among them in those days, and that proper cooking, rather than pills or drugs, was the real cure. Hygiene, teaching them that sleeping with closed windows, propagated the tuberculosis germ, gave practical results in a reduction of the number of deaths from this one cause. The advantages of preserving foods according to the recipes of the cooking schools or classes soon convinced the more ignorant that well-grounded theoretical knowledge was superior to household practices handed down from mother to daughter, and so created a further demand for this class of instruction. This demand was most distinctly articulated by the farmers' organizations, such as the Patrons of Husbandry, or the Grange, which emphasized instruction in home economics. This demand, in its turn, brought about a higher specialization among educators and made of the arts of homemaking a distinct department of science by itself. The subject and its various branches is now taught in nearly 150 colleges throughout the country, and in a large number of normal and high schools. Generally it is divided into two distinct phases: cultural and technical. The former includes such branches as house decoration, furniture designing and embroidery; the latter has to do with the chemistry of cooking, drainage, dressmaking of the plainer sort, food preserving, etc. The technical branches of home economics, naturally,

are more widely taught, and in many communities in the rural districts classes of adults are taught by special instructors sent out by the Federal and State Departments of Agriculture, by the farmers' lyceums and state granges. Instruction in home economics is now a feature of educational courses in schools and colleges abroad, as well as in this country, as may be judged from the fact that an International Bureau of Home Economics has been established in Fribourg, Switzerland, which acts as a clearing house of literature and general information on the subject in general.

HOME RULE, in general the control of its own affairs by a separate political State; in British politics, a measure which has been more especially advocated in regard to Ireland. The movement originated in the formation of the Home Government Association at Dublin, in 1870, under the presidency of Mr. Isaac Butt. At the general election of 1874 the party succeeded in sending 60 Home Rule members to Parliament for Irish constituencies. The elections of 1885 and 1886 still further strengthened the party, 86 members following the lead of MR. PARNELL (*q. v.*).

The original scheme has been materially modified since Butt's time and some Irishmen have declared openly for absolute independence, which many believe to be the ultimate aim of the whole party. The conversion of Mr. Gladstone and many members of the Liberal party to Home Rule principles added immense strength to the movement. In 1893 a Home Rule bill was passed by the Commons, but defeated by the Lords. In 1898, however, an act passed both houses of Parliament, providing for a system of free local self-government in Ireland. The act follows the main lines of the legislation adopted for England and Scotland, accompanied only by such variations as are necessary owing to the special circumstances of Ireland.

In April, 1912, Premier Asquith introduced a bill providing for a bicameral Parliament, i. e., a Senate of 40 nominated by the British Parliament and a House of Commons of 164 responsible to the Irish Executive, Ireland to have 42 representatives in the British House of Commons. An amendment provided for elections to the Irish House of Commons on the basis of electoral representation, the Senate, after an interval of five years, to be so elected. This bill, passed January, 1913, was rejected by the Lords. It was passed a third time May, 1914. The Premier introduced an amendment, providing that the Ulster counties be excluded for six years, when a referendum should decide the question of their joining the Irish Union. This was a concession to the Carsonites, who threatened armed resistance against allegiance to a Dublin parliament. The Secretary for War Seely told certain British officers that they would not be called on to take arms against Ulster's resistance to Home Rule, and this pledge the British Government repudiated. Colonel Seely, therefore resigned and Asquith took the War portfolio. The Home Rule Act was suspended by the Premier until 12 months after the war. The Irish revolt in 1916 led to an attempt by various factions to bring in Home Rule. Lloyd George conducted the negotiations, but failed because the Unionists would not agree that the Irish members should be maintained in undiminished numbers after Home Rule was set up in Dublin. The Irish Convention of 1919, in which all Irish factions but the Sinn Fein participated, failed to reach a complete agreement.

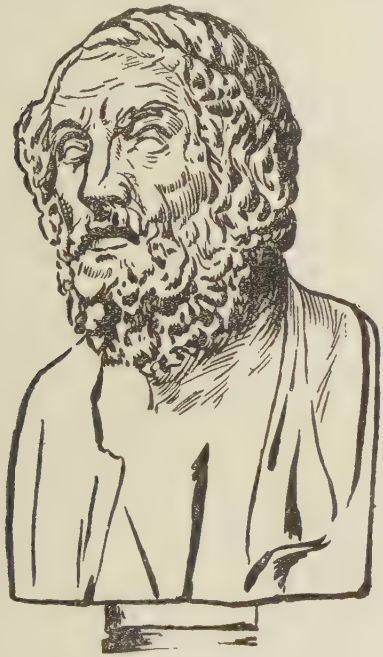
HOME, DANIEL DUNGLAS, a Scotch spiritualist; born near Edinburgh, March 20, 1833. He was taken by an aunt to the United States, where in 1850 he had become a famous medium. In 1855 he removed to London and made many converts. He was presented at several courts and to the Pope; and he joined the Roman Catholic Church, but was ultimately expelled for spiritualistic practices. He published two series of "Incidents of my Life" (1863 and 1872), and "Lights and Shadows of Spiritualism" (1877). He died in Auteuil, June 21, 1886.

HOMERIDÆ, a race of rhapsodists or singers, with regard to whom there are three theories: (1) That they were the descendants of Homer. (2) That they were poets of an early epoch, but of a regular school, whose works, collected and arranged in a complete form, were attributed to Homer. (3) That they were a race of wandering minstrels, who, coming after Homer, imitated him, added to, and interpolated his works.

HOMER, a poet of ancient Greece, whose birthplace and date are entirely unknown. Seven cities or more, of ancient Greece, claimed him as a native, and he is generally conjectured to have lived between 1000 B. C. and 700 B. C. He was reputed to have been blind, but the so-called Homeric hymn, from which the legend of him is inferred, is now held to have been of a much later date than the "Iliad" and "Odyssey." These last-named poems were commonly known as Homer's from a very early period. In 1795, however, a German critic, Fried-

rich August Wolf, maintained that writing was unknown in Homer's time; that the "Iliad" and "Odyssey" were by different authors, put together in the 6th century B. C.

The weight of critical authority favors the hypothesis that they were at first the work of a single mind; though certain books and passages have been added. The "Iliad" is the story of the siege of Ilium (Troy), and the attempt to rescue Helen, the wife of Menelaus, King of Sparta, whom Paris, son of Priam, King of Troy, had abducted.



HOMER

The "Odyssey" relates the return, through many hardships and adventures, of Odysseus (Ulysses) to his home after the siege of Troy, his welcome by his faithful wife Penelope, and punishment of her presumptuous suitors. The style of these poems is simple and noble, the action rapid, and the theme dramatic and heroic.

HOMER, LOUISE, an American contralto; born in Pittsburgh, Pa. Her maiden name was Louise Dilworth Beatty; in 1895 she married her teacher in harmony, Sidney Homer. After studying in Paris she made her début there in "La Favorita" in 1898. The following year she sang at Covent Garden, London, and in Brussels. In 1900 she joined the Metropolitan Opera House, where her success has been such that she has remained a member for over twenty years. Probably her most successful rôle is that of Amneris in Verdi's "Aïda."

LOUISE HOMER

HOMER, WINSLOW, an American artist; born in 1836, at Boston, Mass. At the age of twenty-one he began making drawings for "Harper's Weekly," and first gained prominence by his Civil War drawings: "Rations" (1863); "Prisoners from the Front" (1865) and "The Bright Side" (1865). These received favorable notice from European expositions and encouraged Homer to continue his work, which he did, confining himself for a time to pictures from New England life. His most celebrated work has been his pictures of the life at sea in which he has excelled all other American artists. Among his best works are "Lost on the Grand Banks," "Undertow," "Eight Bells," "The Maine Coast." He died in 1910.

HOMESTEAD, a borough in Allegheny co., Pa., on the Pennsylvania, the Pittsburgh and Lake Erie, the Bessemer and Lake Erie, and the Union railroads; 10 miles S. E. of Pittsburgh. It is the trade center of the surrounding country; is the seat of the Carnegie steel works; and has several glass works and machine shops. There are daily and weekly newspapers, electric lights, public schools, high school, electric street railways, National banks. On July 6, 1892, labor troubles culminated in a serious riot, provoked by the introduction of Pinkerton detectives in the mills. The riot was subdued by the State militia

with difficulty, and some loss of life. Pop. (1910) 18,713; (1920) 20,452.

HOMICIDE, the killing of any human being. Homicide is of three kinds—justifiable, excusable, and felonious. The first has no stain of guilt; the second very little; but the third is the highest crime that man is capable of committing against a fellow-creature. Justifiable homicide is of various kinds, including such as arise from unavoidable necessity or accident without any imputation of blame or negligence in the person killing. Homicide in the course of justice, in the execution of any criminal or civil process, is of this kind. The necessity must, however, be real and apparent in all cases of this sort. Homicide is justifiable in the prevention of any atrocious crime, as an attempt to murder, or to break into a house during the night. Justifiable homicide does not apply to crimes which are unaccompanied by violence, such as the picking of pockets, etc. The general principle of the law is, that when a crime in itself capital is endeavored to be committed by force, it is lawful to repel that force by the death of the party attempting it. Excusable homicide is committed either by misadventure or in self-defense. Homicide by misadventure is where a man doing a lawful act, without any intention of hurt, and using proper precaution to prevent danger, unfortunately kills another; as when a man is at work with a hatchet, the head flies off and kills a bystander; for the act is lawful, and the effect is merely accidental. As prize-fighting and sword-playing are unlawful, if either of the parties engaged be killed, such killing is felony or manslaughter. Homicide in self-defense, from a sudden affray or quarrel, is rather excusable than justifiable in the English law. Felonious homicide is an act of a very different character from the two former, being the killing of a human creature, of any age or sex, without justification or excuse. It is divided into three classes—murder, manslaughter, and self-destruction.

HOMILDON HILL (hom'il-don), a battlefield in England. In 1402 Earl Douglas at the head of 10,000 Scots had ravaged England as far as Newcastle, and was returning, when on Sept. 14 he was intercepted by an English army under Hotspur and the exiled Earl of March and Dunbar, and posted himself upon Homildon (Humbleton) Hill. Hotspur was eager for a headlong charge, but, by March's advice, the bowmen were set upon the Scots, who sustained an irretrievable defeat.

HOMILETICS, the art of preaching; that branch of practical theology which teaches the principles of adapting the discourses of the pulpit to the spiritual benefit of the hearers.

HOMILY, a sermon addressed to a congregation of people; a plain, familiar discourse on some religious topic. The "Book of Homilies," in the English Church, is the name given to a collection of sermons setting forth the principal doctrines of Christianity, and principles of Protestantism. The first part was published by Archbishop Cranmer in the reign of Edward VI., and the second by order of Convocation in that of Elizabeth.

HOMŒOMERIA (hō-mē-ō-mē're-ä), the name given to the physical theory of Anaxagoras of Clazomenæ, who flourished in the 5th century B. C. According to this hypothesis, every material substance is made up of infinitely small parts similar to itself. This theory bears some resemblance to that of the monads of Leibnitz in modern times.

HOMŒOPATHY (hō-mē-op'ä-thē), the system of medicine which aims at curing diseases by administering medicines which produce symptoms similar to those which they are designed to remove. The Latin dictum on the subject is "like cures like." Its founder was Samuel Hahnemann (1755–1843); born in Meissen in Upper Saxony. In 1810 he published "Organon of the Healing Art," in which he explained his system, calling it for the first time homœopathy. Hahnemann and his followers have attempted experimentally to ascertain what therapeutic agent to prescribe in each case. Experience has shown them that the doses should be exceedingly minute. It has many advocates in the United States and abroad. Homœopathy is opposed to heteropathy or allopathy.

HOMOLOGOUS, in geometry, corresponding in relative position and proportion. In physiology, corresponding in type of structure; thus, the human arm, the foreleg of a horse, the wing of a bird, and the swimming-paddle of a dolphin or whale, being all composed essentially of the same structural elements, are said to be homologous, though they are adapted for quite different functions.

HOMOTAXIS, the arrangement of strata in different localities, apparently in the same relative position in the geological series, without its being known whether or not they are contemporaneous. The existence of the same fossils, or many of them, in strata widely separated in geographical position, or at least

not occurring together, so as to have their relative age tested by proved continuity or by visible superposition.

HONAN, or **HO-NAN** (hō-nan′), a central province of China; area, 67,940 square miles; pop. about 25,000,000 Its capital, Kaifung-fu, is on the Yellow river, from which it has often suffered, the river bed being here elevated above the adjacent country.

HONDO (hon′dō), the name given by the Japanese to the chief island in their empire. The area is 87,425 square miles. See JAPAN.

HONDURAS, a republic of Central America; bounded by Nicaragua, Guatemala, the Caribbean Sea and the Pacific Ocean; area, 46,250 square miles; pop. about 610,000; capital, Tegucigalpa.

Topography.—The country is generally mountainous, and is traversed by the Cordilleras, connecting the Andes on the S. with the Sierra Madre on the N. The rivers are numerous though small, the principal ones being the Ulna, Aguan, Choluteca, and Chamelican. The republic has nearly 500 miles of sea coast with numerous fine harbors.

Climate and Productions.—The climate is mild in the higher regions and semi-tropical in the lowlands. Agriculture is the principal occupation of the people. The mineral resources are great; gold, platinum, silver, copper, lead, zinc, iron, antimony, nickel and cobalt being found in nearly every department.

Commerce.—The chief agricultural product is bananas, which are grown mainly on the Caribbean coast. That region also produces cocoanuts. The staple food product is corn. Other agricultural products are rubber, coffee, tobacco, beans, rice, and sugar cane. The total imports in 1919 amounted to about $5,000,000 and the exports to about $7,000,000. Practically all the exports are taken by the United States, which also furnished nearly all the imports.

Communications.—In recent years the main roads of the country have been improved so that they are passable by motor cars. The railroad from Puerto Cortez to Potrerillos, about 70 miles in length, was taken over by the Government in 1912, and has been completely overhauled and repaired. In 1918 a line was completed from the Port of Tela to El Progreso. There are in all about 365 miles of railway. There were in 1919 about 630 miles of telephone lines and 4,500 miles of telegraph lines.

Finance.—The revenue is derived chiefly from customs, and from spirit, explosive, and tobacco monopolies. The total revenue for 1919-1920 was $6,688,976 and the total expenditure amounted to $7,770,585. The internal debt for 1919-1920 was $3,555,982. The revenue of the country is mainly derived from tobacco and spirits.

Government.—The legislature is vested in a Congress of Deputies, consisting of 42 members elected directly for four years. The executive is a President, elected by popular vote for four years. He acts through a Council of five, who are ministers of Foreign Relations, Government and Justice, War, Treasury and Public Credit, Public Works and Instruction.

Religion and Education.—The prevailing religion is the Roman Catholic, but freedom is guaranteed to all creeds. Instruction is free and compulsory. There are about 1,000 schools, with about 1,200 teachers. There are about 95,000 children of school age, of whom about 35,000 attend school. The expenditure for education in 1919 was 384,980 pesos. There is a university at Tegucigalpa, where there is also maintained a central institution for secondary instruction.

History.—Honduras was discovered by Columbus in 1502, conquered by Cortez in 1523, joined the Republic of Central America in 1821 and became an independent State in 1839. There have been several small civil wars and conflicts with adjoining States. In 1894 the present constitution was adopted and in 1897 Honduras became a part of the Greater Republic of Central America, which soon dissolved.

In July, 1906, there was a short war between Honduras and Salvador on one side, and Guatemala on the other. There was a revolt against the Government in 1910, headed by General Valladeras. In the following year, the former president, Bonilla, instigated a revolt. The United States Government intervened to adjust the difficulties. Disturbed conditions continued throughout the several years following, and in 1913 United States marines were landed to protect American property. In 1916 an arbitration treaty was negotiated between Honduras and the United States. A revolution against the rule of President Bertrand broke out in 1919, largely as a result of the anti-German attitude of the executive. In September, President Bertrand resigned. There was another revolution in February, 1920, which resulted from the election of General Gutierrez to the presidency, in October, 1919. This was suppressed without difficulty. His government was recognized by President Wilson in August, 1920.

HONDURAS, BAY OF, a wide inlet of the Caribbean Sea, having on the S. Guatemala and Honduras, and on the W. British Honduras and Yucatan. Along its shores are the islands of Bonaca, Ruatan, Utila, Turneff, and numerous islets and reefs called cays.

HONDURAS, BRITISH. See BELIZE.

HONE, WILLIAM, an English antiquary; born in 1780. He began life in a law office and became imbued with free-thinking opinions. In 1817 he was prosecuted by the English Government for the publication of alleged irreverent parodies and lampoons, when he defended himself and was acquitted. He gradually abandoned freethought for religious and antiquarian studies. His chief publications are the "Every-day Book" (1826); "Table-talk" (1827–1828); and "Year Book" (1829). He died in 1842.

HONEY, a product primarily of a vegetable character, in many plants existing at the base of the corolla, sometimes in a more or less elongated tube, closed at the lower end, called by Linnæus, on account of its contents, a nectary. Neuter bees collect it to store against winter, and swallowing it by means of their proboscis, transfer it to a distended portion of the œsophagus, called the honey-bag. There certain chemical changes take place upon it, so that when placed, as it ultimately is, in the honeycomb, it is not, as at first, exclusively a vegetable product.

HONEY ANT, an ant (*Myrmecocystus mexicanus*) inhabiting Mexico, and living in communities in subterranean galleries. In summer a certain number of these insects secrete a kind of honey in their abdomens which become so distended as to appear like small pellucid grapes. Later in the season when food is scarce these ants are devoured by the others, and they are also dug up and eaten by the inhabitants of the country.

HONEY BUZZARD, or **BEE-KITE** (*Pernis apivorus*), one of the *Falconidæ* allied to both kites and buzzards, but with many peculiarities, such as the thick feathering of the sides of the head down to the base of the bill. It winters in Africa, and breeds in the wooded districts of north Europe, ranging, however, as far E. as China and Japan. The honey buzzard owes its name to its habit of plundering the nests of bees and wasps for the sake of the larvæ, and apparently also the honey.

HONEYCOMB, the hexagonal cell formed by the hive bee for the reception of honey and for the eggs of the queen bee, and a habitation for the larva of the insect till reaching maturity.

HONEYCOMB MOTH, in entomology, *Galleria cerella*, a small moth which does much damage in beehives, piercing the combs and building as it proceeds a single tube, covered with the excrement of the insect, and formed of the wax on which it feeds. Why the bees tolerate such a foe is a mystery.

HONEY DEW, a viscid saccharine exudation which is often found in warm dry weather on the leaves and stems of plants, occurring on both trees and herbaceous plants. It is often, but not always, associated with the presence of aphides, cocci, and other insects which feed on the juices of plants, and its flow is ascribed to their punctures; but the rupture of the tissues may be due to warm weather, when for the production of sap the superabundance of sugar is thus thrown off. Orange and lemon and coffee plantations sometimes suffer great injury from the abundance of honey dew.

HONEY EATER, or **HONEY SUCKER**, the name of a large family of birds (*Meliphagidæ*), tribe *Tenuirostres*, order *Insessores*, characterized by their long, sharp, slender, curved bills, and their long cleft extensile tongue terminating in a pencil of bristle-like filaments. They are entirely confined to Australia and the islands included in the Australian region, where they are very abundant, living on honey and insects.

HONEY GUIDE, a species of cuckoo, *Cuculus indicator*, which inhabits various parts of Africa, and is celebrated for its curious habit of guiding the natives to the nests of wild bees, by its peculiar cry.

HONEY LOCUST, SWEET LOCUST, or **BLACK LOCUST** (*Gleditschia triacanthos*), a forest tree belonging to the United States, natural order *Leguminosæ*. The foliage has a light and elegant appearance; the flowers are greenish, and are succeeded by long, often twisted pods, containing large brown seeds. The tree is especially remarkable for its formidable thorns, on which account it has been recommended for hedges. The *G. monosperma*, a tree resembling the last, grows in swamps in Illinois and the Southwest.

HONEY SPRINGS, a locality in Kansas near Elk Creek, 25 miles S. of Fort Blunt. A sharp action of two hours' duration was fought here, July 17, 1863, between 6,000 Confederate troops under

General Cooper, and 3,000 Union men commanded by General Blunt. The former suffered a defeat, leaving 150 men dead on the field, and 77 prisoners, besides suffering a loss of 400 men wounded. National loss 77 men, of whom 17 were killed.

HONEY STONE, or **MELLITE**, a mineral of remarkable characters and composition, found in connection with brown coal, in several places in Germany. It occurs in square octahedrons, looks like a honey-yellow resin, and may be cut with a knife.

HONEYSUCKLE, in botany, the genus *Lonicera*. The common honeysuckle is *L. periclymenum;* the stem is 10 or 20 feet high, climbing; the corolla one to one and a half inches long, dirty-red outside, and yellow within. It is found in Europe and North Africa. A cultivated variety is common in gardens. It is called also woodbine and by Milton twisted eglantine.

HONG KONG, an island of China in the Bay of Canton, E. of Macao; area, 32 square miles. It was given to the British by the treaty of Nan-Kin in 1842, depends on the presidency of Calcutta, and has Victoria as capital. A university was opened in 1912. Pop. (1917) 535,100.

HONITON (hon'i-ton), a town of Devonshire, England, near the left bank of the Otter. The famous Honiton pillow-lace, a manufacture introduced here by Flemish refugees in the middle of the 16th century, is still a specialty of the district.

HONOLULU, a city of Hawaii (*q. v.*), on the island of Oahu on Oahu Bay. It is the most important city in the Pacific islands and is an important entrepôt for sailing vessels between the United States and Asiatic countries. Its harbor is one of the finest in the world. The city is situated amid beautiful tropical surroundings and has an equable and healthful climate. Among the chief points of interest are the Palace, the Government Buildings, Roman Catholic cathedral, post-office, and the Bishop Museum, containing the celebrated feather cloaks of Kamehameha. There are numerous churches, public libraries, theaters, daily and weekly newspapers, telephone and telegraph, banks, electric lights and street railways, and many commercial establishments. Pop. (1910) 52,183; (1920) 83,327.

HONOR, a word of many applications. At cards one of the four highest trump-cards—viz., the king, queen, knave, or ace. In English law a seigniory of several manors, held under one baron or lord-paramount. At the English universities the first or highest class in an examination; as, He went out in "honors." A debt of honor, a debt, as money lost in gambling, which cannot be recovered by legal process. A point of honor, a scruple arising from delicacy of feeling, on which depends the course to be pursued in certain cases. Word of honor, a verbal promise or engagement by which one pledges his honor or good faith. Court of honor, a court or tribunal for hearing and determining questions relating to the laws of honor. Honors of war, a distinction or privilege granted to a beaten enemy, as, to march out of a town, etc.

HONORIUS, FLAVIUS (hon-ōr'ē-us), a Roman emperor; son of Theodosius the Great; born in A. D. 384. The chief events of his reign are the adoption of rigorous measures against paganism in 399; the invasion by Alaric in 400–403; another irruption of barbarians under Rhadagaisus, 405–406. Alaric marched on Rome and plundered it in 409, while Honorius shut himself up in Ravenna. Some of the finest provinces of the empire, Spain, Gaul, and Pannonia, were lost in this reign. He died in A. D. 423.

HONORIUS I., Pope; succeeded Boniface V. as Bishop of Rome in 625. His name is connected with the history of the paschal controversy in Ireland and with that of the early Anglo-Saxon Church. At the height of the Monothelite controversy Honorius, at the suggestion of Sergius, patriarch of Constantinople, abstained from condemning the new doctrines, and for his luke-warmness in so doing was stigmatized as a heretic at the Council of Constantinople (680). He died in 638.

HONORIUS II., Pope; succeeded Calixtus II. in 1124, and at the same time, Thibauld was chosen by another party, under the name of Celestin; but he resigned the chair to his rival. He died in 1130.

HONORIUS III., was made Pope after Innocent III., in 1216. He died in 1227.

HONORIUS IV., a Roman; ascended the papal chair in 1285. He displayed great zeal for the Church, and promoted the crusades. He died in 1288.

HONOS, or **HONOR**, a Roman divinity, whose worship was intimately connected with that of Virtus.

HONVÉD (hon-ved'), the name given in Hungary under the earlier kings to the national champions. In the summer of

1848 the term was revived, and applied first to the revolutionary armies, and after the organization of the Hungarian landwehr in 1868 to that body of men.

HOOCH, or **HOOGH** (höh), Pieter de, one of the best Dutch painters in genre; born in 1630. He was peculiarly successful in depicting scenes, illuminated by sunlight, of Dutch domestic life. Many of his finest works are in British galleries. He died about 1681.

HOOD, ALEXANDER, an English naval officer; born in 1727. After service in the Mediterranean and Channel under Saunders and Hawke, he distinguished himself in 1760, while in command of the "Minerva," by recapturing from the French the "Warwick," a 60-gun ship, formerly English, but then armed with 34 guns. During the American War of Independence he served much under Keppel, Rodney, and Howe, in the Channel and the Strait of Gibraltar. He died May 3, 1814.

HOOD, JOHN BELL, an American military officer; born in Owingsville, Ky., June 1, 1831. He was graduated at West Point in 1853, and saw some service against the Indians. He entered the Confederate army, commanded a brigade, and was severely wounded at Gaines's Mill, at Gettysburg, and at Chickamauga, where he lost a leg and was made lieutenant-general. He commanded a corps under Gen. J. E. Johnston in the retreat to Atlanta, and in July, 1864, succeeded him in command of the army. On Sept. 1 he was compelled to evacuate the city and leave the road free for Sherman's march to the sea. He yet made a bold attempt to cut Sherman's communications, and, though worsted at Franklin on Nov. 30, pushed as far N. as Nashville; but here he was again defeated by Thomas on Dec. 16, and at his own request he was relieved of command. He died in New Orleans, Aug. 30, 1879. His personal experiences were published posthumously as "Advance and Retreat" (1880).

HOOD, MOUNT, a mountain of the Cascade Range, situated on the western border of Wasco co., Ore. It is connected by rail with Hood river, by which Portland, Ore., can be reached. The mountain is 11,225 feet high. On its top is an observatory used by the Forest Rangers.

HOOD, ROBIN, a chivalrous outlaw of the reign of Richard I. His exploits in Sherwood Forest are the subjects of many admired ballads. All the popular legends celebrate his generosity and skill in archery.

HOOD, THOMAS, an English poet and humorist; born in London in 1798. During a residence at Dundee, and while only 15 or 16 years of age, he wrote for periodicals. In 1821 he became subeditor of the "London Magazine," and in 1826 appeared his "Whims and Oddities," which was followed by "National Tales" and a volume of serious poetry. From 1829 to 1837 he conducted his "Comic Annual." He published "The Epping Hunt," "The Dream of Eugene Aram" and "Tylney Hall," a novel. In 1837, he commenced a monthly periodical entitled "Hood's Own." His health now began to fail, and he visited the Continent for rest. In 1839 he published his "Up the Rhine," which was very popular. He undertook the editorship of the "New Monthly Magazine," and continued it till 1843. His last periodical, entitled "Hood's Magazine," was commenced in 1844. It was during his last illness that he contributed to "Punch" "The Song of a Shirt," "The Bridge of Sighs," and "The Lay of a Laborer." The pension of $500 conferred upon him on his last illness by Sir Robert Peel was transferred to his wife. He died in 1845.

HOOD, TOM, an English author; son of the preceding; born in 1835. He studied at Oxford, and during his residence there he wrote "Pen and Pencil Pictures." In 1861 appeared his "Daughters of King Daker, and Other Poems." In 1865 he became editor of "Fun." His talents, though similar to those of his father, were less brilliant. He died in 1874.

HOODED SEAL (*Cystŏphora cristăta*), a species of seal, the male of which possesses a movable, inflatable muscular bag, stretching from the muzzle to about five inches behind the eyes. Its usual range extends in America S. to Newfoundland, and in Europe to southern Norway.

HOOFS, the horny tissues which constitute the external part of the feet of certain animals, mostly herbivorous. They may be regarded as homologues of the toe-nails of other animals.

HOOGE, a village near and to the east of Ypres, that saw much fighting during the World War. During 1915 the neighborhood was held mainly by British troops, Keir's Sixth Army Corps, Allenby's Fifth Corps, and the new Fourteenth Light Division. In the summer of 1915 some of the hardest fighting of the war occurred round the trenches of

Hooge. The German trenches here were taken by the British June 16, retaken by the Germans July 30, and were again carried at the point of the bayonet by the British, Aug. 9.

HOOGHLY, or **HÚGLI** (hög-lē′), a river of Bengal proper, and commercially the most important. Taking its distinctive name near the town of Santipur, it has a S. course of 64 miles to Calcutta, and a further course of 81 miles in the same direction to the Bay of Bengal. At its mouth the Hooghly has a width of 15 miles.

HOOGHLY, a city of Bengal proper, capital of a district; on the right or W. bank of the Hooghly river, 25 miles N. of Calcutta. Here is a college for English and Asiatic literature, founded by native munificence. Pop. district, about 1,200,000; city, about 25,000.

HOOK, THEODORE EDWARD, an English journalist; born in 1788. Hook led a life of gayety in London, and became notorious for practical jokes and similar escapades. In 1812 he was appointed accountant-general and treasurer of the Island of Mauritius; but, owing to his gross carelessness, a large deficiency in the military chest was discovered, but no proceedings were taken against him. From 1820 to 1841 he was editor of the "John Bull," and at intervals from 1824 to 1828 he published his "Sayings and Doings," while in 1836 he became editor of the "New Monthly Magazine." His other principal works are "Life of Sir David Baird," and a series of novels, among which are "Love and Pride," "Jack Brag," "Gilbert Gurney," "Gurney Married," "Precepts and Practice," "Fathers and Sons." He died in 1841.

HOOKAH, the water tobacco-pipe of Arabs, Turks, Persians, Hindus, and other Orientals. It consists of a bowl for the tobacco, a water-bottle, and a long flexible tube ending in the mouthpiece. A wooden tube leads from the bottom of the head or bowl down into the water in the bottle, and the flexible tube is continued downward by a stiff tube into the space above the water in the bottle. The "hubble-bubble" of India is a similar but simpler water-pipe, made of a cocoanut filled with water, and two short wooden tubes at right angles, one going into the water, the other merely passing inside the top of the shell.

HOOKER, MOUNT, a peak in the Rocky Mountains in Canada; 15,690 feet high; on the E. boundary of British Columbia.

HOOKER, ISABELLA BEECHER, an American philanthropist; born in Litchfield, Conn., Feb. 22, 1822; daughter of Rev. Dr. Lyman Beecher. She made a life study of woman's rights and duties, and wrote "Womanhood," etc. She died Jan. 25, 1907.

HOOKER, JOSEPH, an American military officer; born in Hadley, Mass., Nov. 13, 1814; was graduated at the United States Military Academy, in 1837, and served in the Florida and Mexican Wars. In 1853 he resigned from the army, but on the outbreak of the Civil War he re-entered it. He fought under McClellan and in northern Virginia and Maryland, receiving a wound at the battle of Antietam. On account of his bravery his soldiers nicknamed him "Fighting Joe Hooker." His concern for his soldiers, especially his care that they be well fed, made him popular with the rank and file. In 1863 he was made commander of the Army of the Potomac, and in May he fought the bloody battle of Chancellorsville, in which nearly 30,000 were killed or wounded. Owing to a difference between himself and General Halleck, Hooker resigned his command (1863), but he still served as major-general, and fought under Grant at Chattanooga and under Sherman at Atlanta. In 1868 he retired from the army. He died in Garden City, N. Y., Oct. 31, 1879.

HOOKER, SIR JOSEPH DALTON, an English botanist; born in Halesworth, Suffolk, June 30, 1817. He was assistant surgeon and naturalist of the expedition of Sir James Clark Ross; visited India in 1847; and in 1871 with John Ball ascended the Great Atlas in Morocco. From 1855 to 1885 he was on the directorate of Kew Gardens. Among his works are: "Botany of the Antarctic Voyage" (1847–1860); "Himalayan Journals" (1854); "Student's Flora of the British Islands" (1870); "Botany" (Science Primers), in 1876; "Journal of a Tour in Morocco and the Great Atlas" (1878), He died in 1911.

HOOKER, RICHARD, an English divine; born in 1553. He became a Fellow of Christ Church in 1577. In 1579 he was appointed deputy Professor of Hebrew; took orders in 1581, and was made preacher at Paul's Cross. In 1584 he became rector of Drayton Beauchamp, and in 1585 Master of the Temple. In 1595 he received the living of Bishopsbourne, in Kent, where he ended his days. His "Ecclesiastical Polity," written in defense of the Church of England, is remarkable for learning, extent of

research and richness and purity of style. He died in 1600.

HOOKER, THOMAS, an English clergyman; born in Markfield, Leicestershire, in 1586. He came to America in 1633. In 1636 removed from Newtown (Cambridge, Mass.) to Hartford, and founded that colony, becoming minister of the First Church there. He won eminence as a theological writer and a preacher, and has a permanent historical importance for his instrumentality in drawing up the first written constitution in America—that of the Hartford Colony. His chief work is "A Survey of the Summe of Church Discipline," in collaboration with John Cotton. He died in Hartford, Conn., July 7, 1647.

HOOKER (WILLIAM) BRIAN, an American author; born in New York City in 1880. He graduated from Yale University in 1902. He served as assistant in English at Columbia University in 1903 and 1905, and as instructor of rhetoric at Yale from 1905 to 1909. He won several prizes for literary performances, and in 1911 wrote the libretto for the opera "Mona," which was awarded a $10,000 prize by the Metropolitan Opera Co. In 1914 he was awarded $10,000 by the City of Los Angeles for the libretto of an opera to be produced on the occasion of the city's centenary. He wrote "The Right Man" (1908); "The Professor's Mystery" (1910); "Poems" (1915).

HOOKWORM DISEASE, a disease known in many countries and under many names, but ankylostomiasis and uncinariasis are the chief in the medical vocabulary, while popular terms are miner's anæmia and dirt-eating. The malady has its origin in an intestinal worm with dorsal and ventral teeth, with which it holds to the small intestine usually, though it is found in different parts of the alimentary canal. The eggs are ejected with the fæces, and as infectious larva are communicable through the skin or mouth.

The disease is prevalent in tropical latitudes chiefly contained within 33 degrees N. and 33 degrees S. of the Equator. The American variety of the disease differs from that prevalent in Europe, Asia, and Africa, in the symptoms as well as in the parasite which causes it, but in both the Old World and the New it is found in all degrees of virulence. The geographical distribution of hookworm in the United States is confined to the Southern States and is heaviest in Virginia, North and South Carolina, Tennessee, Georgia, Alabama, and Mississippi. In four years the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease has treated 539,107 cases in the Southern States.

In the Old World the prevalence of the disease under favoring conditions may be judged by the degree of infection. Thus in Samoa 70 per cent. of the population is infected; in south China 75 per cent.; in India 60 to 80 per cent.; and in Ceylon, 90 per cent. In all these cases there is perceptible both a physical and mental deterioration, usually proportionate to the duration of the malady, its prevalence in childhood resulting in stunted growth and feeblemindedness which are permanent.

In serious cases the body becomes emaciated, the muscles shrink and relax, there is abdominal protuberance, the skin becomes yellow or colorless, with swelling of the hands and feet. Often peculiar appetites are developed, and the patient has been known to eat rags piece by piece, strings, charcoal, resin, sand, clay, wood and chalk. In less serious cases there is a longing for articles of bitter or insipid taste, such as lemons, tomatoes, salt and the like. The disease in mild cases may be lifelong and almost imperceptible. In serious cases death supervenes after weeks or months. The treatment of the malady consists in the removal of the parasite, and drugs such as beta-naphthol and thymol, accompanied with purging medicine, have given satisfactory results.

HOOP-ASH (*Celtis crassifolia*), an American tree of the order *Urticaceæ*, found in the forests of Ohio and in the Western States. It attains a height of 80 feet, and is employed for charcoal.

HOOPER, WILLIAM, an American patriot; born in Boston, Mass., June 17, 1742; was graduated at Harvard College in 1760; practiced law in North Carolina and early interested himself in the colonial struggle with Great Britain; was elected to the Continental Congress in 1774 and signed the Declaration of Independence July 4, 1776. He died in Hillsboro, N. C., October, 1790.

HOOPING COUGH, a spasmodic, infectious disease, usually of childhood, preceded by catarrh of from 3 to 14 days' duration. It sometimes terminates in six weeks, but often lasts as many months, though danger is usually over at the end of six weeks. Emphysema is a dangerous complication. In fatal cases, pulmonary collapse, bronchial inflammation, nervous exhaustion, and general debility are the chief factors.

HOOPŒ, a bird forming the type of a family generally classed with the bee-eaters or the honey-eaters, but also with the hornbills. The European hoopœ (*U. epops*) is about 12 inches long; it has a fine crest of pale cinnamon-red

HERBERT CLARK HOOVER

feathers, tipped with black; upper surface on the whole ashy-brown; wings black, the coverts having white bars; throat and breast pale fawn; abdomen white, with black streaks and dashes. It has a very wide range, from Burmah to the British Islands and Africa.

HOORN, a city of Holland in the Province of North Holland. It is situated on the Hoornerhop, a part of the Zuyder Zee. The city contains many mediæval buildings of great interest. There is a large trade in dairy products and some shipbuilding. Fishing is also an important industry. Pop. about 11,500.

HOOSAC MOUNTAINS, a part of the Green Mountain range in western Massachusetts, through which is pierced the most notable railway tunnel in America. The Hoosac tunnel, which has a length of nearly 5 miles, was commenced in 1851 for the line between Boston and Albany, was twice abandoned, and was finally opened in 1875, having cost the State of Massachusetts about $18,000,000.

HOOVE, a disease in cattle, caused by eating too much green food, which inflates the stomach with gas.

HOOVER, HERBERT CLARK, an American public official and philanthropist. Born at West Branch, Iowa, in 1874; he attended Leland Stanford University, where he graduated in 1895. Learning mining engineering in California, he set out upon his career as a prospector which carried him to China, Russia, and finally to England. He had already acquired a considerable fortune when the World War broke out in 1914. He took charge of the work for Belgian Relief and became chairman of the Committee for the Relief of Belgium. His energy and organizing ability wrought a wonderful work in feeding and clothing a whole people who were practically destitute. When America entered the war President Wilson appointed him food controller, and by his application, energy, and foresight the European allies were fed and the prices of foodstuffs kept within reasonable limits. His marvelous work in these two offices made him a formidable, though unsuccessful, candidate for the Republican nomination for President in 1920. He continued his work of feeding the destitute peoples of central Europe, more especially the children, during 1919, 1920, and 1921. He became Secretary of Commerce in the Cabinet of President Harding on March 4, 1921.

HOP, in botany, *Humulus lupulus*, the only known species of the genus *Humulus*. The root, which is perennial, annually sends forth long, weak, rough, twining stems. The leaves somewhat resemble those of the vine, but are rougher. It has an aromatic odor, sent forth by glands containing a resinous secretion. The hop is indigenous in England, but grows also in the United States, in Belgium, and Bavaria. *Bryonia dioica* is sometimes called wild hop. The native hop of Australia is (1) *Dodonœa*, the seed vessels of which are there used in the manufacture of beer; (2) *Daviesia lætifolia*. Hops are boiled with the wort in brewing beer. They impart a bitter taste and aromatic flavor, and prevent fermentation from being too rapid.

In pharmacy *lupulus* is the designation of hop. The dried catkins of the female plant of *H. lupulus* are from the common hops. They are used to prepare infusion of hop, tincture of hop, and extract of hop.

HOP CLOVER (*Trifolium procumbens*), a plant of the order *Leguminosæ*, distinguished from other species of clover by its bunch of yellow flowers.

HOP TREE, an American shrub of the rue family (*Rutaceæ*), also called

shrubby trefoil, is planted as an ornamental plant. Its fruit is intensely bitter, and is a poor substitute for hops.

HOP WORM, a form of caterpillar. In June, July, and August, the leaves of the hop-vine are often devoured by these active, slender, grass-green caterpillars, with but four pairs of prop-legs. They may be shaken off and the vines saved by daily spraying with whale-oil soapsuds or kerosene emulsion.

HOPE, ANTHONY. See HAWKINS, ANTHONY H.

HOPE COLLEGE, a coeducational institution in Holland, Mich.; founded in 1866 under the auspices of the Reformed Church in America; reported at the close of 1919: Professors and instructors, 18; students, 335, president, E. D. Dimnent.

HOPE DIAMOND, a diamond supposed to have been the property of Louis XIV., reduced from 67½ carats to 44¼ carats; now owned by Mrs. McLean, of Washington, D. C. The stone, which disappeared during the French Revolution, was purchased in 1830 by an English banker named Hope and was finally brought to America in 1909. It was probably reduced to disguise it, and is now worth about $200,000.

HOP FLEA, or TOOTH-LEGGED BEETLE, a very small coleopterous insect, not quite one-tenth of an inch long, which often does much mischief in hop plantations in spring, devouring the tender tops of the young shoots. It is of the same genus as the turnip fly, so destructive to turnips.

HOPKINS, JOHNS, an American philanthropist; born in Anne Arundel co., Md., May 19, 1795. His parents, Quakers, gave him a fair education and the training of a farmer. At the age of 17, however, he went to Baltimore, there became a grocer, and in 1822 founded the house of Hopkins and Brothers. From the grocer's business he retired in 1847 with a large fortune, which he employed in banking and railway operations. In 1873 he gave property worth $4,500,000 to found a free hospital; he presented Baltimore with a public park, and he also gave over $3,000,000 to found the Johns Hopkins University in Baltimore. He died Dec. 24, 1873.

HOPKINS, MARK, an American educator; born in Stockbridge, Mass., Feb. 4, 1802. He was president of Williams College in 1836–1872, and for 30 years president of the American Board of Commissioners for Foreign Missions. Among his works are "Evidences of Christianity"; "The Law of Love, and Love as a Law"; and "An Outline Study of Man." He died in Williamstown, Mass., June 17, 1887.

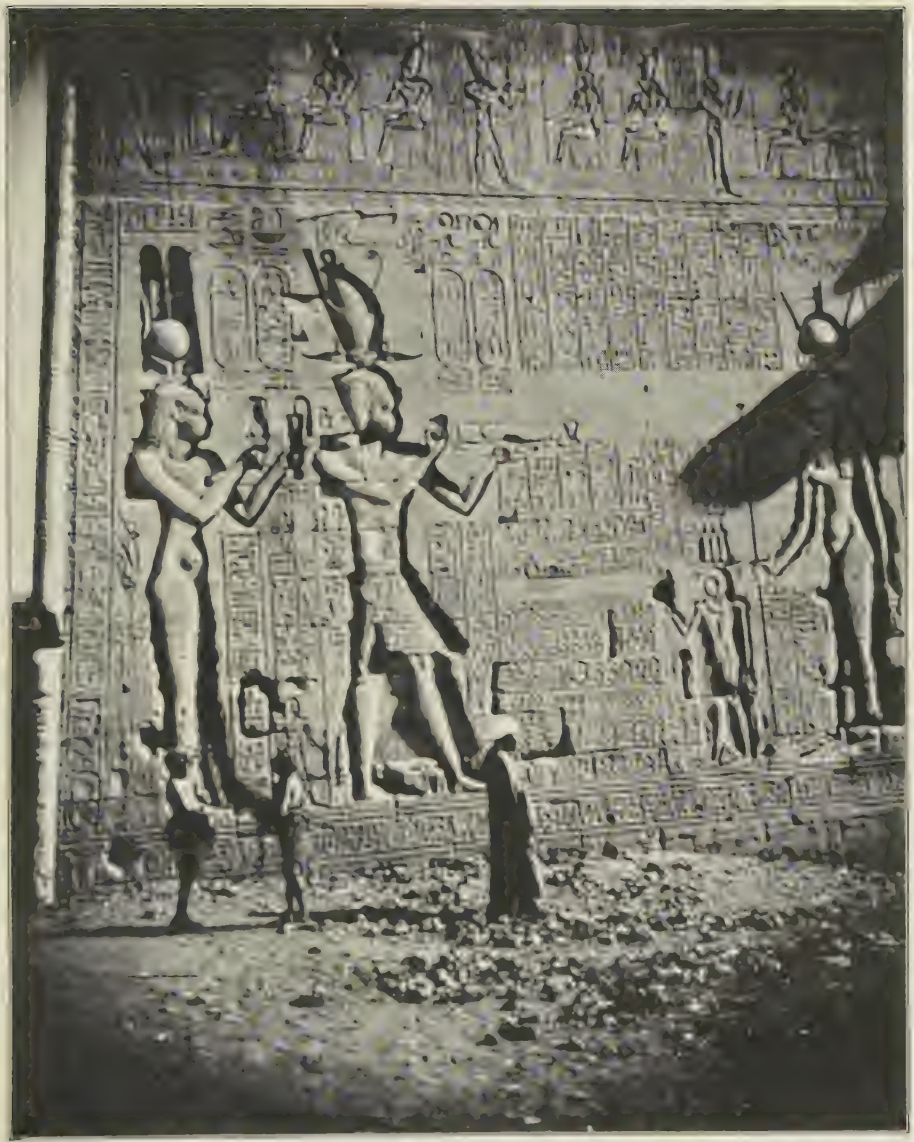
HOPKINS, STEPHEN, an American statesman; born in Providence, R. I., March 7, 1707. In 1732 he was elected a representative to the General Assembly from Scituate, and was chosen speaker of that body in 1741. In 1751 he was appointed chief-justice of the superior court of Rhode Island, and in 1756 was elected governor. He signed the Declaration of Independence. After this he was several times chosen a member of Congress. He died in Providence, July 13, 1785.

HOPKINSIANS, the name given to those who adopt the theological opinions of Samuel Hopkins. They are not a distinct sect, but are pretty numerous in the United States, in some of the Christian bodies of which the tenets are generally Calvinistic. The fundamental doctrine of the Hopkinsian system, however, is, that all virtue and true holiness consist in disinterested benevolence, and that all sin is selfishness—the self-love which leads a man to give his first regard even to his own eternal interests being condemned as sinful.

HOPKINSON, FRANCIS, an American political writer; born in Philadelphia, Sept. 21, 1737. He wrote: "The Pretty Story" (1774); "The Prophecy" (1776); "The Political Catechism" (1777). He also wrote poems and essays. The "Miscellaneous Essays, and Occasional Writings" appeared posthumously. His humorous ballad, "The Battle of the Kegs," was widely known. He was one of the signers of the Declaration of Independence. He died May 9, 1791.

HOPKINSON, JOSEPH, an American jurist, son of Francis; born in Philadelphia, Nov. 12, 1770; was one of the ablest lawyers of his day. He wrote the famous patriotic song, "Hail Columbia" (1798), for the benefit of an actor, calling it at first the "President's March." He died in Philadelphia, Jan. 15, 1842.

HOPKINSVILLE, a city and county-seat of Christian co., Ky., on the Louisville and Nashville, the Tennessee Central and the Illinois Central railroads; 73 miles N. W. of Nashville, Tenn. It is the seat of McLean College, Bethel Female and Southern Kentucky colleges, and Western Kentucky Insane Asylum, and has manufactures of tobacco, lime, brick, wagons, and carriages. There are daily and weekly newspapers, electric



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HIEROGLYPHICS AND CARVINGS ON THE EXTERIOR WALL OF THE TEMPLE OF DENDERA, EGYPT. CLEOPATRA AND HER SON ARE REPRESENTED IN PRESENCE OF THE GODS

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RUINS, COVERED WITH HIEROGLYPHICS, OF HYPOSTYLE HALL, AT MEDINET HABU, THEBES, EGYPT

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HIEROGLYPHICS AND PORTRAITS ON A CLAY TABLET IN THE COLLECTION OF THE UNIVERSITY OF PENNSYLVANIA, A TABLET USED FOR STAMPING POSTAGE. THE SEATED FIGURE IS IBI-SIN, KING OF "UR OF THE CHALDEANS"

Photo, Brown Brothers

AN IDOL IN THE RUINS OF COPAN, HONDURAS

© *Underwood & Underwood*

HARBOR OF HONGKONG, CHINA

©Ewing Galloway

THE HYDRAULIC POWER COMPANY'S POWER HOUSE AT NIAGARA FALLS

Photo, Ewing Galloway

HYDRAULIC MINING OF GOLD AT NOME, ALASKA

©Keystone View Company

PALISADES OF THE HUDSON RIVER, NEW JERSEY SHORE

lights, public library, National bank and high school. Pop. (1910) 9,419; (1920) 9,696.

HOPPER, JAMES MARIE, an American writer; born in Paris, France, in 1876. He came to the United States at an early age and graduated University of California in 1898. He studied law and was admitted to the bar in 1900. He served on the staff of many newspapers in San Francisco and was a member of the staff of "McClure's Magazine" in 1903. His published novels include "The Freshman" (1912); "What Happened in the Night" (1913). During the World War he contributed, as war correspondent, to "Collier's" and other magazines.

HOPPER, WILLIAM DE WOLF, American actor; born in New York City in 1858. He was educated in the private schools. His first appearance on the stage was in the comedy "Our Boys" in 1878. After appearing in other rôles he studied music and joined the McCaull Opera Co. Within a few years he had become one of the most prominent comic opera stars on the stage and this position he held for many years.

HOPPIN, AUGUSTUS, an American illustrator; born in Providence, R. I., in 1828. He was graduated, Brown University, 1848, and later went abroad to study art. He was successful in drawing on wood and in book illustrations. He also published several novels and sketches. He died in 1896.

HOPPIN, JAMES M., an American writer; born in Providence, R. I., in 1820. He was graduated from Yale in 1842 and Andover Theological Seminary in 1845. In 1879 he was made professor of the history of art at Yale and in 1899 he became emeritus professor. His publications include "England"; "The Early Renaissance," etc. He died in 1906.

HOQUIAM, a city in Washington in Grays Harbor co., situated on Grays Harbor and on the Chicago, Milwaukee and St. Paul, the Northern Pacific, and the Oregon-Washington railroads and Navigation Company railroad. It is in the midst of an extensive timberland and is important as a port, having a fine harbor. Its industries include shipyards, lumber and shingle mills. There is a Carnegie library and a handsome high-school building Pop. (1910) 8,171; (1920) 10,058.

HOR (hōr), in Arabia Petræa, a mountain of a conical form in the range of Mount Seir, on the E. side of the Arabah, or great valley running from the Dead Sea to the Elanitic Gulf. It is an irregularly truncated cone, with three rugged peaks, overlooking a wilderness of heights, cliffs, ravines, and deserts. On this mountain Aaron died, alone with his brother and son (Num. xx: 22–29; xxxiii: 38). On its summit stands a Mohammedan tomb of Aaron, marking perhaps his burial place.

HORACE, QUINTUS HORATIUS FLACCUS, a Roman poet; born near Venusia (now Venosa), a town of Southern Italy, on the confines of Apulia and Lucania, in 65 B. C. His father took the greatest pains in providing for his son's education. At the age of 18 years he went to Athens to complete his studies; and while there, Marcus Brutus passing through the city on his way to Macedonia, Horace, accompanied by other Roman youths, joined the army; became military tribune; fought in the last battle for the freedom of Rome at Philippi, and saved himself by flight. Though he saved his life, he forfeited his estate, and was reduced to great want, till Vergil introduced him to Mæcenas, through whose interest he recovered his patrimony. Augustus now became his friend, and offered to make him his secretary, which Horace declined. When Mæcenas was sent to Brundusium to conclude a treaty between Augustus and Anthony he took with him Horace, Vergil, and other literary friends; and, not long after, he presented Horace with the Sabine villa, to which he retired for the rest of his days. His "Odes" are models of that kind of composition, and his "Epistles" and "Satires" abound with acute and vivacious observations, while his "Poetic Art" presents the difficulties of poetical composition, and the principles which should guide the poet in his work. Horace died suddenly, in the year of Rome 746, and 8 B. C.

HORÆ (hō-rē), in classical mythology, divinities regarded in two points of view—as the goddesses of the seasons, and of the hours of the day. Their duty was to hold the gates of heaven, which they opened to send forth the chariot of the sun in the morning, and receive it again in the evening.

HORATII (hō-rā′shē-ī), three Roman brothers, who, according to tradition, in the reign of Tullus Hostilius engaged three Alban brothers (the Curiatii), in order to decide the supremacy between Rome and Alba. Victory went to Rome, and the sole surviving Horatius was triumphantly conducted back to the city. But his sister had been betrothed to one of the Curiatii, and her demonstrative

grief so enraged Horatius that he stabbed her. For this he was condemned to death, but his father and the people obtained his pardon.

HORATIUS COCLES, a hero of ancient Rome. The Tarquins having, after their banishment, sought refuge with the Etrurian king Porsenna, the latter advanced against Rome (507 B. C.) to restore them. According to tradition Horatius Cocles, along with two companions, held the Sublician bridge against the enemy while the Romans broke it down behind them. When this was nearly finished he sent back his two companions, and as the bridge fell he plunged into the Tiber in full armor and safely reached the opposite bank.

HORATIUS FLACCUS, QUINTUS, commonly known as HORACE (*q. v.*).

HORDEIN (-hōr'dīn), a term that has been applied to a substance that can be extracted from barley, which is merely a mixture of starch, cellulose, and a somewhat nitrogenous matter.

HOREB, a mountain belonging to the same ridge as Mount Sinai, where is still pointed out the rock from which water issued at the blow of Moses.

HOREHOUND, or **HOARHOUND**, in botany, a plant so hoary as to be almost woolly; the leaves are broadly ovate and crenate; the whorls of flowers dense; wild in Continental Europe, North Africa, Western and Southern Asia, etc. Black or stinking horehound is *Ballota nigra*, or the genus *Ballota;* wild horehound, *Eupatorium teucrifolium*. The plant contains a bitter principle and a volatile oil, used as a tonic, expectorant, and alterative for coughs.

HORICON (hō'rē-kon), a name applied to Lake George by the novelist Cooper. The Red Men called the lake Andialarocte. **Jogues, the French** missionary pioneer, named it St. Sacramente, because he discovered it the day before that festival.

HORIZON, the visual circle of the firmament. The term "sensible," "visible," or "physical" horizon is often used, though not quite accurately, for a plane supposed to be extended from the observer's eye at right angles to a vertical line at the place and extending to the celestial vault. The horizon convenient for astronomical purposes, and called the astronomical, or rational horizon, is different from this. The spectator's eye is supposed to be, not at the surface, but at the center of the earth, with the planet transparent enough not to impede vision. In geology the term is used with regard to the apparent age of strata. Strata which appear, broadly speaking, contemporaneous or homotaxial are said to be on the same horizon.

HORIZON, ARTIFICIAL, a shallow basin of mercury, covered, when necessary, to protect it from the wind, with a roof made of glass plates whose surfaces are parallel. It is used in connection with a sextant in observations on land, and it derives its name from the contradistinction to the sea (or natural) horizon which is used by navigators.

HORN, a substance which may be divided into two distinct classes. First, the branched, bony horns of the stag genus, and the simple, laminated horns of the ox genus, and other kindred genera. The first of these kinds of horn is applied to the same purposes as bone and ivory, and the manufacture is almost similar. The other kind of horn, found in the ox, antelope, goat, and sheep, consists of a number of conical sheaths inserted one into another, the innermost resting upon the vascular membrane covering the bony core. The tip is very dense, and the layers of which it is composed are scarcely distinguishable. This kind of horn appears to consist of coagulated albumen; and there is a regular connection between horns, nails, claws, hoofs, scales, hair, feathers, and even skin. The horns of oxen are the principal ones used for manufacturing purposes; the horns of bulls and cows being preferred to those of bullocks, which are thin and of a coarse texture. The horns of goats and sheep are whiter and more transparent than those of any other animals.

In horn manufacture, the first process necessary is to remove the core which is forming bone ash, a substance valuable in making cupels for assaying purposes. They are also used in other ways—for making glue, stiffening for cloth dresses, and for manure. The solid tip of the horn, after being sawn off, is used for making knife handles, umbrella handles, etc. After being divided into thin laminæ, the remainder of the horn is used for various purposes. Hoofs and horn cuttings are used for making prussiate of potash and prussian blue; and the clippings of the combmaker are used as manure. An artificial horn is made from the gelatine obtained from bones by muriatic acid, and converting it into a horny substance by tanning.

HORN, CAPE, commonly spoken of as the extreme S. point of America, is a steep, black, bare mountain headland of one of the small islands of the Fuegian Archipelago. It was named Hoorn, an-

glicized Horn, "the Horn," when rounded in 1616 by the Dutch navigators, Lemaire and Schouten. It was sighted by Drake in 1578.

HORN, HOORNE, or HORNES, PHILIP, COUNT VAN, a Flemish soldier and statesman; born in 1518; was the son of Joseph de Montmorency-Nivelle, and of Anne of Egmont, and stepson of John, Count van Horn, who constituted him and his brother his heirs on the condition of assuming his name. Philip gradually rose to be governor of Gueldres and Zütphen, admiral of the fleet, and councillor of state. He fought at St. Quentin in 1557, and at Gravelines in 1558, and 1559 accompanied Philip to Spain. On his return he joined the Prince of Orange and Egmont in resistance to Philip. On the arrival of Alva at Brussels he was arrested, in September, 1567, on a charge of high treason, and he and Egmont were beheaded in June, 1568.

HORNADAY, WILLIAM TEMPLE, an American naturalist; born near Plainfield, Ind., Dec. 1, 1854. He was for a number of years chief taxidermist of the United States National Museum, Washington, and in 1896 became director of the New York Zoölogical Park. He wrote: "Two Years in the Jungle"; "The Buffalo Hunt"; "Free Rum on the Congo"; "Taxidermy and Zoölogical Collecting"; "Camp-Fires on Desert and Lava" (1908); "Our Vanishing Wild Life" (1913); "Wild Animal Conservation in Theory and Practice" (1914); etc.

HORNBEAM (*Carpīnus Betŭlus*, natural order *Cupuliferæ*), a small bushy tree common in Great Britain, and often used in hedges. The wood is white, tough, and hard, and is used in turnery, for cogs of wheels, etc. The inner bark yields a yellow dye. The American hornbeam (*C. americana*) is a small tree sparingly diffused over the whole of the United States.

HORNBILLS, a remarkable group of birds confined to Southern Asia and Africa, akin to the kingfishers and the toucans, remarkable for the very large size of the bill, and for an extraordinary horny protuberance by which it is surmounted, nearly as large as the bill itself, and of cellular structure within. The rhinoceros hornbill is almost the size of a turkey, of a black color, except on the lower part of the belly and tip of the tail, which are white. It has a sharp-pointed, slightly curved bill, about 10 inches long, and furnished at the base of the upper mandible with an immense appendage in the form of an inverted horn. During incubation the female is plastered up in the hollow of a tree and fed by the male through a small aperture left for the purpose. The hornbills are of arboreal habit, and feed on fruits.

MALE HORNBILL FEEDING FEMALE IN NEST

HORNBLENDE (-blend), one of the five most abundant simple minerals of which rocks are composed, the others being felspar, quartz, mica, and carbonate of lime. It is closely akin to augite, but the forms of the crystals in the two species are different, and the cleavage parallel to the faces of the oblique prism in hornblende are more strongly marked than the corresponding cleavage in augite.

HORNBOOK, the primer or apparatus for learning the elements of reading, used in England before the days of printing. It consisted of a single leaf, containing on one side the alphabet, large and small, in black letter or in Roman. Then followed a form of exorcism and the Lord's Prayer, and, as a finale, the Roman numerals.

HORNCASTLE, an English market-town of Lincolnshire. It has a great August horse-fair, to which Borrow devotes 11 chapters of the "Romany Rye."

HORNE, SIR HENRY SINCLAIR, a British military officer; born in 1861; he received his general education at Harrow, then prepared for a military career at Woolwich. On graduating, in 1880, he received a commission in the Royal Artillery. He served with distinction in the South African War, from 1899 to 1902. At the outbreak of hostilities in

the World War, in 1914, he was given command of the artillery of the First Corps of the British Army in France. During 1915 he was in command of the Second Division, but in the latter part of that year he was sent to take command of the British forces assigned to the defense of the Suez Canal, where he distinguished himself by his decisive defeat of the Turkish Army sent against him. Returning home, he was given command of the First Army of the British forces in France. It was he who invented the "creeping barrage," during the operations on the Western Front, in 1916.

HORNED SCREAMER, a South American grallatorial bird, larger than a goose, with a long, slender, mobile horn projecting from the forehead, whence the epithet. Its color is blackish, with a red spot on the shoulder.

HORNED TOAD, also called HORNED FROG and HORNED LIZARD (*Phrynosoma cornutum*), a lizard belonging to the *Agamidæ*. It is found in Mexico, Texas, Oregon, and California.

HORNELL, a city in Steuben co., N. Y., on the Canisteo river, and on the Pittsburgh, Shawmut and Northern, and the Erie railroads; 60 miles S. of Rochester. It has important manufactures, including sash, doors, and blinds, furniture, leather, shoes, carriages, wire fencing, brick and tile, silk, veilings, gloves, and machinery. It is the seat of a free academy and Mercy Hospital, and has daily and weekly newspapers, public high school, electric lights, library, and National banks. Pop. (1910) 13,617; (1920) 15,025.

HORNET (*Vespa crabro*), the largest species of wasp found in Great Britain and America. The thorax is mostly black, the fore part rufous; the abdomen is yellow. The sting is very painful. The hornet is a very voracious insect, seizing and devouring bees and other insects, or carrying them to its nest to feed its young. The nest is in a hollow tree; or other sheltered place.

HORNET MOTH, a name for *Sphecia apiformis*. It has transparent wings, the hind margins brown, and the costæ yellowish brown; the head yellow. The larva is whitish yellow, with a blackish brown head. It feeds in the autumn and winter on the stems and roots of poplar trees. Also a term applied to the genus *Sphecia*. The lunar hornet moth is *S. bembeciformis*. The larva feeds on the wood of the sallow. In their wings and body they resemble hornets, which, however, have mandibles and a sting, both of which are wanting in hornet moths.

HORNIMAN, ANNIE ELIZABETH FREDERICKA, a British theatrical manager. She was born at Forest Hill, Kent, England, in 1860. She was educated partly privately and partly in the Slade School under Professor Legros. Became interested in theaters and the suffrage; studied astrology; made an attempt at dramatic affairs at the Avenue Theater in 1894; later helped to form the Irish National Theater Society at the Abbey Theater, Dublin; bought the Gaiety Theater, Manchester, and started the first theater with a Catholic repertoire in England in 1908.

HORNSTONE, a cryptocrystalline variety of quartz resembling flint, but more brittle. Called also chert.

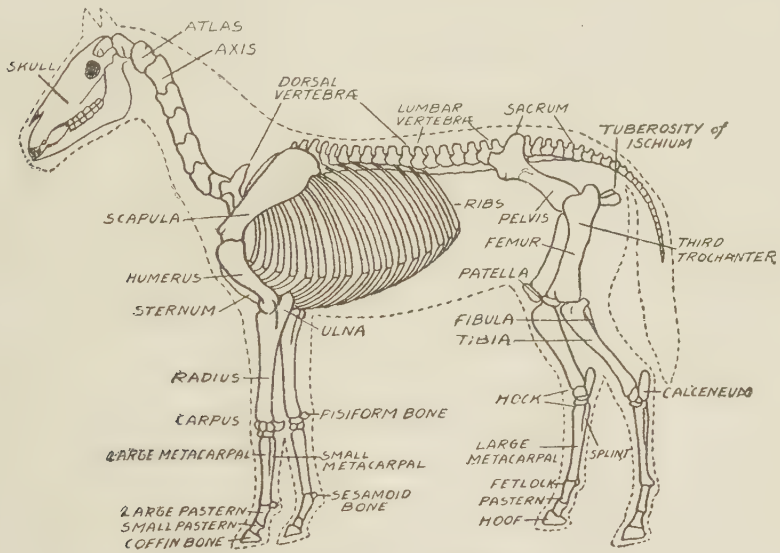
HORNUNG, ERNEST WILLIAM, an English writer; born in Middlesborough, Yorkshire, in 1866. He spent the years from 1884 to 1886 in Australia and then returned to England and devoted himself to writing. His best known books are "The Rogue's March" (1896); "The Amateur Cracksman" (1899); "Denis Dent" (1903); "Stingaree" (1905); "Mr. Justice Raffles" (1909); "The Crime Doctor" (1914). He married in 1893 a sister of Sir Arthur Conan Doyle.

HOROLOGY, that branch of science which treats of the principles and construction of machines for measuring and indicating portions of time. It is almost an impossibility to state who was the individual that intended either a clock or a watch; due to the fact that formerly the term horologium was applied to a sun dial or a clock indiscriminately. As far back as the close of the 13th or the beginning of the 14th century, striking clocks were known in Italy. In 1288, as we are told by Coke, a stone clock tower was erected opposite Westminster Hall, and in it was placed a clock. About 1364 a German horologer, Henry de Wick, de Vick, de Wyk, or de Wyck, set up a clock in the tower of the palace of Charles V. of France.

The date at which the size of clocks was so far reduced as to render them portable, is uncertain; it must, however, have been anterior to 1544; for in this latter year the corporation of master clockmakers at Paris procured from Francis I. a statute precluding all but master clockmakers from constructing clocks or watches, large or small.

The third era in clockwork was the application of the pendulum. Galileo was the first who remarked, or at least the first who formally announced

in his work on mechanics and motions which was published in 1639, the isochronal property of oscillating bodies suspended by strings of the same length. In a general view, horological machines may be regarded as consisting of three essential parts: 1. A moving power, which produces a rotary motion about an axle; 2. A train of wheelwork, by means of which a velocity is obtained having any required ratio to that of the primary axle; 3. A regulator, by which the rapidity of the revolution is determined, and uniformity of motion produced. The moving power is either a heavy weight, which descends by the force of gravity, or a spring which is coiled up within a barrel and unwinds itself by the force



SKELETON OF HORSE

of its elasticity; the first is preferred on account of the perfect regularity of its action when the instrument is to remain fixed in a place; the second is necessary for pocket timepieces and those which cannot be kept in a fixed position, as on shipboard. The train of wheelwork is chiefly remarkable on account of the delicacy and accuracy of its construction. The regulator is either a pendulum, of which, by the theory of falling bodies, the oscillations are isochronal or performed in equal terms; or a heavy balance, the reciprocal vibrations of which are also isochronal. Of the various mechanical contrivances introduced into horological machines for accomplishing particular purposes, the most important is the escapement (or scapement), or that part of the mechanism by which the original rotatory motion is converted into a reciprocating motion, and gives impetus to the pendulum or balance. Some other parts are also of primary importance, as the maintaining power, a contrivance by means of which the motion is maintained or the machine kept going while the weight or spring is being wound up; the fusee by which in watches and spring clocks the force acting on the wheel work is rendered equal in all states of the tension of the spring.

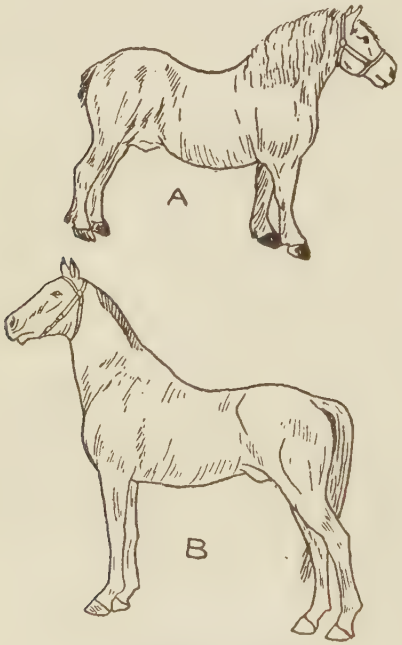
Electrical clocks are of two kinds—electrical dials and electrical clocks. The electrical dial has no body belonging to it, but is connected by means of a wire with a standard clock at some other place. An apparatus is also provided for sending a galvanic current through the wire at certain regular intervals of time. By this means the dial hands are made to leap over a small portion of their compass whenever a current is transmitted through the wire; and the time value of the movement is marked by the figures on the dial. An electric clock, however, is one that carries with it its sources of power and is independent of any wire connected with another place.

HOROSCOPE, in astrology, an observation of the sky and the configuration of the planets at a certain moment as at the instant of a person's birth, from which the astrologer claimed to be able to foretell the future. Also a

scheme or plan of the 12 houses or 12 signs of the zodiac, in which is marked the disposition of the heavens at a particular moment, and by which astrologers pretended to be able to foretell the fortunes of persons according to the position of the stars at their birth.

HORSE (*Equus*), an ungulate or hoofed mammal of the order *Perissodactyla*, characterized by having an odd number of toes; the family *Equidæ* formed the group *Solidungula* of old writers, owing to the presence of only a single hoof, which marks them off quite sharply from all allied animals.

The existing species of the genus *Equus* are about half a dozen in number. (1) The horse (*E. caballus*) is characterized by the tail being furnished with long hairs quite from its base; by the long and flowing mane; by the possession of a bare callosity on the inner surface of the hind as well as of the fore legs; and by the head and ears being smaller and the limbs longer than in



A. BELGIAN HORSE
B. ARAB HORSE

the other species. (2) The ass (*E. asinus*) is almost as widely distributed as the horse; it is probably of African origin. (3) The Asiatic ass (*E. hemionus*) differs from the common ass in being of a more reddish color, in the absence of the shoulder stripe, and in having smaller ears. (4) The quagga (*E. quagga*) has dark stripes upon the head and shoulders on a brown ground; it is said to be now extinct. (5) Burchell's zebra (*E. Burchelli*) is white, with stripes on the body and the upper parts of the limbs; it extends from the Orange river to Abyssinia. (6) The mountain zebra (*E. zebra*) is white, with long

A. HACKNEY
B. CHAMPION CLYDESDALE "BARON'S PRIDE"

black stripes reaching down to the feet. It is limited to the Cape Colony and is rapidly disappearing. These last three are sometimes united into a special genus, *Hippotigris*. (7) The explorations of the Russian traveler Prejevalsky in 1881 added another species to the list of Asiatic forms, which has been called after him. The long hairs of the tail begin only half-way down it; the mane is short and erect, and there is no forelock; the head is large and heavy; the ears smaller than those of the ass. It inhabits the dry sultry regions of the Dzungarian desert, living in companies of 15 to 20, each led by a stallion. Only two herds were observed, and only one specimen was secured. The native country of the horse seems to have been Central Asia. It became early domesticated in Egypt. The Greeks and Romans had some covering to secure their horses' hoofs from injury. In the 9th century horses were only shod in time

of frost. Shoeing was introduced into England by William I., 1066.

It was believed that the original breed of horses is extinct, and that the half-wild herds existing in many places have descended from animals once in captivity. Thus when the horse was first introduced by the Spaniards in 1537 at Buenos Ayres, it is believed that there were no wild horses in America. But individuals escaping ran wild, and by 1580 their descendants had spread over the continent as far as the Straits of Magellan. Their favorite abode is on the Pampas, where they now exist in untold numbers. In Paraguay the larva of a fly kills them. In 1764 they were introduced into the Falkland Islands by the French with a similar result. But there was found in La Plata a now extinct species of horse, and more *Equidæ* have been found in the New than in the Old World. The horse may have descended from a striped ancestor, stripes still sometimes remaining, especially in duns and mouse-duns. His present colors are brown, gray, or black, sometimes with roundish pale spots. His age is ascertained by examining first which teeth are developed, and then to what extent they have been worn away by use. They are best tamed by kindness. Like other domestic animals the horse has run into various breeds. The most celebrated is the Arab horse. The racehorse, the hunter, and the carriage horse all vary considerably in character.

HORSE CHESTNUT, a handsome genus of trees or shrubs (*Æscŭlus*) belonging to the natural order *Sapindaceæ*, having large opposite digitate leaves and terminal panicles of showy white, yellow, or red flowers *Æ. Hippocastanum* (the common horse chestnut) is familiar to everyone. The tree is said to have been brought from Constantinople to England in the beginning of the 16th century. Three other species are found in North America, popularly known under the name of buck-eye.

HORSENS, a city of Denmark, in the Province of Aarhus. It has a beautiful church, a convent, a chapel, and a high school. The principal industries are ironworking, shipbuilding, and the manufacture of woodenware. There are also important agricultural interests. Pop. about 24,000.

HORSE POWER, the measure of a steam engine's power, as originally settled by James Watt, being a lifting power equal to 33,000 pounds raised one foot high per minute. Thus an engine is said to be of 100 horse power (h. p.) when it has a lifting capacity equivalent to 3,300,000 pounds one foot high per minute. To ascertain the horse power of an engine multiply together the pressure in pounds on a square inch of the piston, the area of the piston in inches, the length of the stroke in feet, and the number of strokes per minute, divide the result by 33,000, and the quotient, less one-tenth, allowed for loss by friction, will give the horse power. Engines are frequently said to be of so many horse power nominal; the real or indicated horse power, however, often exceeds the nominal by as much as three to one.

HORSERADISH, in botany, *Cochlearia armoracia*. Sir Joseph Hooker places it under a sub-genus of *Cochlearia* called *Armoracia*, which has valves with no dorsal nerve. It is found as an alien, or a denizen, in ditches, corners of fields, etc. It is acrid and stimulating. It is used in atonic dyspepsia, also as a sudorific in chronic rheumatism, and is a diuretic in dropsies.

HORSESHOE CRABS, a name for the crustaceous genus *Limulus*, more commonly called king crabs. The resemblance to a horseshoe is in the buckler which covers the anterior part of the body.

HORSLEY, SAMUEL, an English bishop; born in 1733. He was appointed in 1788 Bishop of St. David's, from which he was translated to Rochester in 1793, receiving at the same time the deanery of Westminster; and finally to St. Asaph in 1802, when he resigned his deanery. Horsley was the greatest theological controversialist of his day, and is famous for his controversy with Priestley on Unitarianism. He died in 1806.

HORTENSE, EUGÉNIE DE BEAUHARNAIS, (hōr-tens′), daughter of Josephine, the consort of Napoleon I., and of the Vicomte de Beauharnais, her first husband; born in Paris in 1783. She was married to Louis Bonaparte, the brother of Napoleon, in 1802. In 1806, Hortense became queen-consort of Holland, and about a year afterward was separated from her husband after giving birth to three sons: (1) Napoleon Charles, who died in infancy. (2) Napoleon Louis, who was killed in an insurrection at Romagna, 1832; and (3) Louis Napoleon, the last emperor of the French. In 1814 she was made the Duchess of Saint-Leu. After the Hundred Days she was forced to fly from France, and in 1817 settled in the castle of Arenenberg, Thurgau, Switzerland, where she spent a large part of her time. She died Oct. 5, 1837.

HORTENSIUS, QUINTUS (hōr-tēn'-sē-us), a celebrated Roman orator; born in 114 B. C. Till his great rival, Cicero, bore away the palm, he eclipsed all others in the grace and splendor of his eloquence. He held many civil and military offices; was made consul 69 B. C.; was Cicero's colleague as augur; and died immensely rich in 50 B. C.

HORTICULTURAL SOCIETIES, societies formed by the encouragement of both the art and the science of the cultivation of garden plants.

HORTICULTURE, the art of cultivating or managing gardens; the cultivation of a garden; the rearing and management of flowers, fruits, and vegetables in a garden. This word has a much broader meaning than its Latin derivations indicate. Horticulture includes, as divisions, pomology, floriculture, garden vegetable culture, and nursery culture. Pomology embraces the culture of all fruits, whether grown in large or small areas. Viticulture is a sub-division of pomology.

HORUS (hō'rus), an Egyptian deity, whose name, "Hor," means "the day," or "the sun's path," and is generally written in hieroglyphics by the sparrow hawk, which was sacred to him. Under the name of Horus were included several deities, as Haroeris, the elder Horus, and Harpocrates, or the younger Horus; Har-sam-ta, Horus, the uniter of the upper and lower world, who was the second son of Athor, resided in Annu, Heliopolis, and emanated from the eye of the sun; and Har-net-ta, another form of the same god, represented as a boy wearing a triple crown, who existed from the commencement of things, a self-created being, and emanated from the Nu, or firmament, besides several others. But the principal Horus was Horus, the son of Isis (Har-si-hesi), represented as a naked child standing wearing a skullcap, or the crown of Upper and Lower Egypt.

HORVATH, MICHAEL (hōr'vät), a Hungarian historian; born in Szentes, Oct. 20, 1809. In 1844 he became Professor of the Hungarian Language and Literature in Vienna, and later Bishop of Csanad. He took an active part in the revolutionary war, holding the appointment of minister of "culture" and public instruction. The defeat of the Hungarians drove him into exile. In his absence he was condemned to death, but was allowed to return home under the amnesty of 1867. Of several historical works which he wrote three deserve special mention: "History of Hungary to 1823," and its continuations, "Twenty-five Years of Hungarian History, 1823–1848," and "History of the War of Independence in Hungary." He died in 1878.

HOSANNA (hō-zan'ä), a form of Jewish acclamatory prayer or blessing, derived originally from Ps. cxviii:25. It was often uttered at the Feast of Tabernacles, when the 25th and 26th verses of Psalm cxviii. were repeated. It therefore came to be used for the branches of myrtle, etc., or for the great palm leaves, carried about at the festival, or even for the festival itself. Also the acclamation raised by "the whole multitude of the disciples" (Luke xix: 37) on our Lord's triumphal entry into Jerusalem. It is now employed as an acclamation of praise.

HOSEA (hō-zē-ä), the first of the 12 minor prophets as arranged in the Bible. He prophesied for a long time from Uzziah to Hezekiah, about 785–725 B. C.

HOSHIARPUR (hosh'yar-por), capital of a district in Punjab, India, near the foot of the Siwalik Hills, 90 miles E. from Lahore. It is a seat of an American Presbyterian Mission.

HOSIERY, a general term for all kinds of knitted articles, including drawers, petticoats, night-dresses, etc., and fancy articles such as head-dresses, hoods, shawls, neckerchiefs, cravats, etc. The materials used for the purpose are cotton, linen, and wool, the last of which is sometimes mixed with cotton or silk. Silk is also frequently used alone.

HOSKINS, SIR ARTHUR REGINALD, a British military officer. He was born in London, in 1871, and entered the army in 1891. He served in the Dongola Expedition in 1896, and was mentioned in dispatches. From 1897 to 1899 he was with the Nile Expedition, receiving the 4th class Medjidie, Khedive's medal, 9 clasps, bt. major, British medal. From 1899 to 1902 he was in the South African War, receiving medal and clasps. In 1902–1903 he served in East Africa. When the World War broke out he was sent to East Africa, after a short service in Europe, and there made commander-in-chief. For his services in German East Africa he was made lieutenant-general in 1917, and baronet in 1919.

HOSKINS, JAMES DICKASON, an American educator; born at New Market, Tenn., in 1870. He graduated from the University of Tennessee in 1891. For two years following he acted as instructor of mathematics in that institution. After serving as professor of his-

tory in several schools and colleges, he became Associate Professor of History at the University of Tennessee in 1900. He was successively appointed assistant professor, and in 1907 became full professor. From 1911 he was dean of the University of Tennessee. He wrote several articles on the history of Tennessee and the part taken by Tennessee in the war. From 1900 to 1910 he was editor of the University of Tennessee publications.

HOSMER, HARRIET, an American sculptor; born in Watertown, Mass., Oct. 9, 1830; studied at Rome; and among her best-known works are "Ideal Heads of Daphne and Medusa," "Puck," "The Sleeping Faun," "Waking Faun," "Beatrice Cenci"; statues of Thomas H. Benton, Queen Isabella, and the Queen of Naples; and a number of ornamental fountains. She died Feb. 21, 1908.

HOSMER, JAMES KENDALL, an American author; born in Northfield, Mass., in 1834. He graduated from Harvard University in 1855 and also Harvard Divinity School in 1859. He was Unitarian pastor of Deerfield, Mass., from 1860 to 1866, serving in the meantime in the Civil War as private. He was Professor of Rhetoric and English at Antioch College from 1866 to 1872, and from 1872 to 1874 was Professor of English and History at the University of Missouri. From 1874 to 1892 he was Professor of English and German Literature at Washington University, and from 1892 to 1894, librarian of the Minneapolis Public Library. He was president of the American Library Association in 1902 and 1903. His published works include "Short History of German Literature" (1878); "Story of the Jews" (1885); "Life of Samuel Adams" (1885); "Short History of Anglo-Saxon Freedom" (1890); "History of the Civil War in America" (in the "American Nation" series, 1907); "Expedition of Lewis and Clark" (1902); "Journal of John Winthrop" (1908), etc.

HOSPICE (hos'pis), a little convent belonging to a religious order, occupied by a few monks, and destined to receive and entertain traveling monks; or houses of refuge and entertainment for travelers on some difficult road or pass, as the Hospice of the Great St. Bernard.

HOSPITAL, any building for the reception and treatment of sick, injured or infirm persons. If possible the hospital should not be surrounded by other buildings than those belonging to itself. The structural arrangements should be such as to secure perfect, free circulation of air and the greatest amount of sunshine. The size of the wards depends on the number of patients to be maintained, allowing a capacity of 3,000 cubic feet for each inmate. From 20 to 32 beds have been taken as a basis for ward construction. In some hospitals there are wards of one and two beds for cases which require special care, or which from the nature of their disease require partial isolation. The general form of ward construction is governed by the question of renewal of air and the superficial area allowed to each patient, for on this depends the distance of the sick from each other, the facility of changing their beds, cleanliness and many other important features. In a ward 24 feet wide, with a window for every bed or two, a 7 foot 6 inch bed space along the outer walls is sufficient. That would give 90 superficial feet per bed, which must, however, be increased in pernicious fevers, surgery and obstetrical cases. The ceilings should be from 12 to 14 feet high. With a view to economizing heat in winter and keeping the wards cool in summer the walls should be hollow, ceiled, and of an impervious polished surface, easily cleansed with soap and water. All corners should be rounded off and no cracks tolerated, since they fill with impurities.

The floors and woodwork throughout should be of oak, closely jointed, oiled and waxed, rubbed and polished. The woodwork should be confined to that required by absolute necessity. The forms of windows must be such as to facilitate the entrance of light as a factor to promote health. One square foot of window glass to every 50 or 55 cubic feet of space will afford a well lighted, cheerful ward.

The consensus of professional opinion is opposed to the present plan of constructing large edifices for hospital purposes; the benefits they confer being greatly diminished by the risk of hospital diseases,—fevers of certain forms, erysipelas, pyæmia, etc.,—which when once installed are most difficult and often impossible to eradicate.

The profession today favors a system of construction known as the "pavilion plan," which can be called a compromise measure between the large block edifice and the cottages and huts. According to this system the wards are separate and distinct from the administration building and should be arranged to form pavilions one story high, never more than two, and they should always surround the administrative blocks. This mode of construction is applicable to both large and small establishments. The

Royal Infirmary of Edinburgh, the Herbert Hospital of Woolwich, the New York Hospital, the United States Marine Hospital of San Francisco are among the best examples of the pavilion style.

Hospitals or asylums for inebriates, likewise hospitals for those addicted to the use of opium and other narcotics, have lately been established throughout the United States. Fever hospitals are maintained in all communities to secure isolation in infectious diseases, and hospital ships and floating hospitals are extremely valuable to promote complete isolation in cases of virulently infective disorders, such as SMALLPOX (*q. v.*), etc.

Military and naval hospitals, establishments for the care of sick and wounded soldiers and seamen, exist in all civilized nations. For military hospitals in the World War see RED CROSS; also consult "Manual Medical Dept. U. S. A." (Washington, 1916).

HOSPITALLERS, or **ORDER OF ST. JOHN OF JERUSALEM**, a military order originated in a monastery, chapel, and hospital, founded at Jerusalem by some merchants of Amalphi, in 1048. In 1099 the hospital received increased territories from Godfrey de Bouillon, who transferred its government from the monks to his knights. In 1113 they were confirmed as a spiritual order by Pope Pascal II. The Hospitallers greatly distinguished themselves in the crusades at Jerusalem in 1152, and at Acre in 1191. In 1308 their order was united with that of St. Samson of Jerusalem. They conquered Rhodes, Aug. 15, 1309. Their wealth was much increased in 1311 by the addition of the possessions of the suppressed Templars. In 1321 they defeated the Turks in a great naval battle, and in 1341 took Smyrna. They took Alexandria in 1365, and in 1480 compelled Mohammed II. to retreat from Rhodes. In 1498 the possessions of the dissolved orders of the Holy Sepulcher and of St. Lazarus were bestowed upon the Hospitallers. In 1522 they were compelled to quit Rhodes by Soliman II., who besieged their garrison, and in 1530 they were allowed to settle in Malta.

HOSPITAL CORPS, UNITED STATES, a body of men attached to the United States army, whose duty it is to perform the duties connected with the field hospital and ambulance service under officials of the Medical Department. The recruits belonging to the corps are trained for the special services required of them, such as the giving of first aid to the wounded, the conveyance of stretchers and the handling of ambulances. While the members of the corps are given a certain amount of military instruction, and are subjected to the physical training of ordinary enlisted men, this is only given in view of emergencies, and they are not provided with arms. Military posts are all provided with units of the Hospital Corps, one non-commissioned officer to each four privates. During war these numbers are increased and regiments are accompanied by Hospital Corps detachments, with post surgeons, non-commissioned officers and privates in proportion to eventualities. The corps in war works in connection with the Red Cross, the Sanitary Service, and the other services having a common purpose, but the work is subdivided, so that there is no overlapping from the time the soldier is wounded till his removal to base hospital and home territory.

HOSPITAL SHIPS, ships having as their purpose the care of the sick and wounded in time of war. It was provided by the Geneva Convention in 1868 that hospital ships should be allowed to proceed unmolested by belligerents on either side, if they fulfilled the necessary regulations. These regulations were to the effect that the ship should have no arms on board, should indicate its character clearly by flying the Red Cross flag, by being painted white with a broad green stripe on each side extending from bow to stern, if a government ship, and a red stripe if a ship not in the service of a government. It was to be permitted to belligerents on either side to visit the ship to see that these regulations were being adhered to, and immunity was only assured in each case. If it was discovered that the ship in question carried arms, officers and enlisted men unwounded and not in the hospital service, or military supplies, or was being used for any purpose other than those indicated, it at once lost its immunity and could be treated as a belligerent vessel.

In most countries of Europe hospital ships are regularly in service as units in the naval service, but before the entry of the United States into the late European War such ships, apart from one ship, the "Solace," were not provided for by the United States, though the personnel capable of manning them received a preliminary training from the Medical Department. Since the European War a number of vessels used during the period of hostilities have been detailed for continued use in the service as hospital ships, and officers and men have continued to receive valuable training from the experiences gained during the war.

In time of peace hospital ships are

assimilated to hospitals on shore and are under the supervision of the Bureau of Medicine and Surgery of the U. S. navy. Surgeons are usually in command, and they are supported by assistant surgeons and nurses, in addition to the personnel necessary for navigation and other purposes. An ordinary ship has about 200 beds, to which would be attached a hospital staff of 10 officers and 40 men. Hospital ships used for civilian purposes are permanent institutions. These are of two classes: those that work in conjunction with the merchant marine, and those used as floating hospitals for the poor and for the purpose of giving children in the cities the benefit of sea air during the summer.

During the World War charges and counter charges with respect to the improper use of hospital ships arose constantly. The German Government repeatedly accused the British of using the ships for the transport of unwounded soldiers and military supplies, and, as a result, treated some of them as ordinary vessels of war.

HOSPODAR (hos-pō-där), a Slavonic title once commonly given to the governors of Moldavia and Wallachia. Lithuanian princes and Polish kings also bore the title.

HOST, the consecrated bread or wafer used by the Roman Catholic Church in her celebration of the eucharist. It is unleavened, thin, flat, and of circular form, and has certain mystic signs impressed on its surface. The host is supposed after being blessed to be no longer bread and wine, but to be transformed into the real body and blood of Christ.

HOSTAGE, a person given in pledge or security for the performance of certain conditions, or for the safety of others.

HOT AIR ENGINES, a type of prime mover in which air, which has been heated to a high temperature and pressure, acts upon a piston and thus converts thermal energy into mechanical energy. Air, under high temperature and pressure, is admitted into a cylinder where it expands and moves a well fitted piston, supplied with nearly airtight piston rings. Consequently its temperature and pressure are decreased. The air is then exhausted either into the atmosphere, or carried through a system of pipes and again heated and injected into the engine. When the same charge of air is reheated, and new air used only to replace leakage, the engine is said to be of the closed cycle type, while those of the open cycle type are the ones in which a fresh charge of air is used for each stroke of the piston. Some engines are designed to have the temperature change take place at constant volume, others at constant pressure. In some engines a device is used to absorb the heat from the exhaust air and use it to heat the new air. If the engine is fitted with such apparatus, it is said to be regenerative, if it has no such device it is non-regenerative. The theoretical economy of the hot air engine has often been urged, but there has been no large successful commercial application of the principle, for in the larger sizes steam is much more economical, while the smaller sizes cannot compete with the internal combustion engine. The Rev. Robert Stirling built a comparatively successful engine about 1816, which was used commercially in Dundee, Scotland, after 1827. In 1833 John Ericsson designed a hot air engine of large size for use in his boat, but after much experimentation it was pronounced a complete failure. Napier and Rankins did early experimental work in this field, and Stephen Wilcox, Philander Shaw, and S. H. Roper, Americans, separately built and sold a number of the engines.

HOT BED, a bed or stratum of stable-litter, tan, dead leaves, etc., in a state of fermentation, and therefore emitting heat, covered with a layer of earth, the whole having a glazed box surmounting it. A hot bed is used for the growth of melons, cucumbers, etc., or to afford temporary protection to seeds unlikely to germinate vigorously in the open air.

HOT BLAST, a stream of air forced through a furnace and heated to 500° or 600°. The combustible gases from the stack are generally used to heat the air. For this purpose a kind of oven is built near the top of the stack, surmounted by a kind of chimney which draws off a portion of the inflamed gas. In this oven is a series of pipes through which the air is forced before it enters the stack. The hot blast effects a saving of heat, and accomplishes the reduction of the most refractory ores in less time and with a less expenditure of fuel than the cold blast.

HOTCHKISS, BENJAMIN BERKELEY, an American inventor; born in Watertown, Conn., Oct. 1, 1826; was in early life a machinist and turned his attention to the invention of deadly weapons, most notable of which is the HOTCHKISS GUN (*q. v.*). He died in Paris, Feb. 14, 1885.

HOTCHKISS GUN, a gun consisting of an inner tube over which is shrunk

a jacket, the latter being extended at the breech and enlarged to carry the breech mechanism. The breech-block moves vertically in a slot cut through the extension of the jacket. The firing mechanism is carried within the breech-block, and the block moves vertically and falls of its own weight, the mechanism for opening and closing lifts the block up in closing and keeps it from falling open. The block is opened by means of a crank having a stud on the end which fits in a slotway in the right side of the block. When the crank is turned, the stud sweeps through its arc, and the block is carried up or down with it. The rocking-shaft carries the hammer and has a toe, which turns the rocking-shaft and retracts the hammer. When at full cock the firing system is caught by a gear actuated by the rear spring. During this movement of the crank, owing to the curve of the slotway, the breech-block does not move, but as soon as the hammer is cocked, the block descends, and as it moves down, the cartridge-case extractor is moved directly to the rear, starting the cartridge-case from its seat, and then throwing it out of the gun. In loading the gun, the charge is entered in the chamber and pushed home till the head of the cast fetches up against the hook of the extractor. The block is closed by a reverse motion of the crank. As the block rises, the forward, upward edge pushes the cartridge and extractor home. When the breech is closed the cocking-toe is in position to allow the cocking-arm and hammer to act in firing. Pulling the trigger fires the charge. The recoil is taken up by a coiled spring carried in a small cylinder below the gun. The naval gun is mounted with its trunnions resting in a pivoted yoke which turns in a pivot stand.

HOTEL, a superior house of public entertainment for travelers or temporary sojourners; an inn. In France, the palace or town house of a nobleman, or person of rank or wealth. In another sense it is applied to buildings set apart for the reception of sick and infirm paupers; as, the "Hôtel-Dieu," "Hôtel des Invalides."

HÔTEL DE VILLE, in France, a city or town hall.

HOT SPRINGS, a city and county-seat of Garland co., Ark.; on Hot Springs creek, and on the St. Louis, Iron Mountain and Southern, the Memphis, Dallas and Gulf, and the Chicago, Rock Island and Pacific railroads; 55 miles S. W. of Little Rock. The name was acquired from the presence in and near the town of thermal springs numbering over 70, that flow from the side of a hill and contain valuable medicinal qualities. These springs constitute a much frequented resort for invalids, the temperature of the water often reaching 150°. The city contains a United States Army and Navy Hospital, the Convent of Our Lady of the Springs, and a National bank, and a large farming trade; and mines of lead, silver, and gold near the city. Pop. (1910) 14,434; (1920) 11,695.

HOTTENTOTS (hot'en-tots), the people who were in possession of the greater part of what is now Cape Colony when it was first visited and colonized by Europeans. The Hottentots were so called by the earliest Dutch settlers. It is popularly used to include the two distinct families distinguished by their native names: The Khoikhoi, the so-called Hottentot proper, and the Sān (Sā) or Bushmen. Again, among the Khoikhoi proper, the terms Hottentots, Hottentots proper, or Cape Hottentots are often applied to the remnants of the tribes who formerly lived around Cape Town; while the inhabitants of Griqualand West, of the South Kalihari, and of Great Namaqualand are distinguished by their tribal names as Griquas, Namaquas, Koras or Koramas, though they are as much Hottentots as the Khoikhoi of Cape Colony. The Bushmen are hunters; the Khoikhoi, nomads and sheep-farmers.

At the present time the so-called Hottentots proper may number about 17,000; and the half-breeds, mostly employed in the Cape Colony, may number probably 100,000. The majority of the former and almost all the latter class are now semi-civilized, and copy the habits, customs, dress, and vices of the European colonists. In general they are of medium height, not very robust in build, and have small hands and feet. Their skin is a pale brown color; their hair woolly, growing in curly knots; their cheek-bones very prominent; and their chin pointed. The men were herdsmen, and not fond of war, though they liked to hunt. Their dwellings were huts of wood and mats, or tents, disposed in circles, and easily transportable. Their manner of living was entire patriarchal: each tribe or division of a tribe had its own chief. Their method of perpetuating family names was that the sons took their mother's family name, while the daughters took their father's.

HOUDON, JEAN ANTOINE (ö-dâ*ng'*), a French sculptor; born in Versailles, March 20, 1740. After studying in Italy he returned to Paris and executed the busts of Voltaire, Rousseau,

Molière, Franklin, Buffon, Catherine II., etc. He became, in 1778, member and professor of the Academy of Fine Arts. He was invited to the United States and carved the statue of Washington, now at the Virginia State capitol in Richmond, which is considered the most authentic likeness of "the father of his country." Houdon died in Paris, July 15, 1828.

HOUGH, EMERSON, an American writer; born in Newton, Iowa, in 1857. He graduated from the State University of Iowa in 1880 and spent several years in travel and exploration in the West. Largely through his efforts an act of Congress protecting the buffalo in Yellowstone Park was passed. He wrote many novels and descriptive articles on western subjects. These include "The Story of the Cowboy" (1897); "The Girl at the Half-way House" (1900); "The Mississippi Bubble" (1902); "The Story of the Outlaw" (1906); "The Way Out" (1918). He also contributed many stories and sketches to magazines.

HOUGHTON, RICHARD MONCKTON MILNES, LORD, an English statesman; born in Fryston Hall, Yorkshire, June 19, 1809. A Conservative in Parliament, he joined the Liberals under Lord John Russell, and in 1863 was raised to the peerage. His best poetry appears in: "Memorials of a Tour in Greece"; "Memorials of a Residence on the Continent, and Historical Poems"; "Poems of Many Years"; "Palm Leaves." His prose works include: "Life, Letters, and Literary Remains of John Keats"; "Monographs, Personal and Political." He died in Vichy, France, Aug. 11, 1885.

HOULTON, a town in Maine, the county-seat of Aroostook co. It is on the Bangor and Aroostook and the Canadian Pacific railroads. It is the center of an important farming region and its industries include foundry and machine shops, lumber mills, woolen mills, starch factories, etc. There is a public library, hospitals, parks, a high school, and the Ricker Classical Institute. Pop. (1910) 5,845; (1920) 6,191.

HOUND, a name applied to dogs used in hunting. The true hound, such as the bloodhound, the foxhound, and the staghound, hunt only by scent. In this division may also be included the basset-hound (a short-legged dog used in unearthing foxes and badgers), the beagle, and the harrier. The greyhound and the deerhound run by sight alone, and are not hounds in the correct acceptance of the term.

HOUR, the 24th part of a natural day; the space of 60 minutes. The early Egyptians divided the day and night each into 12 hours, a custom adopted by Jews or Greeks probably from the Babylonians. The day is said to have been first divided into hours from 293 B. C., when L. Papirius Cursor erected a sun dial in the temple of Quirinus at Rome.

HOUR ANGLE, in astronomy, the angle formed at the pole at the instant of observation between the meridian of the plane and the hour circle or circle of declination, passing through the heavenly body. It is measured by the arc of the equator which has passed or will pass under the meridian of the observer between the instant of observation and the moment when the heavenly body is on the same meridian. Called also the horary angle.

HOUR CIRCLE, in astronomy, one of the great circles passing through the poles of the sphere, and necessarily perpendicular to the equator. So called, because to note when the sun reaches each of these circles is a method of ascertaining the hour of the day. Hour circles are called also circles of declination. Also a small brass circle fixed to the north pole of a terrestrial globe, divided into 24 hours, and furnished with an index for pointing them out.

HOUR GLASS, a glass having two bulbs and a connecting opening through which the sand in one bulb runs into the other. The amount of sand and size of the opening are such that a given amount of time is consumed in the passage.

HOUSATONIC RIVER (höz-ä-ton'ik), a river which rises in Massachusetts, flows through Connecticut, and enters Long Island Sound near Bridgeport. In its course of nearly 150 miles it affords water-power to many manfacturing cities and towns.

HOUSE, a civilized dwelling. In point of law, the common expression, "a man's house is his castle," is in most instances true. Except where there has been a criminal offense, a man, in England and in the United States, can hold his house against all comers. In the United States a court can give a messenger permission to force a door, and arrest or distrain as may be wished.

In astrology the word "house" denotes the station of a planet in the heavens; a 12th part of the heavens as divided by great circles drawn through the north and south poles of the horizon, in the same way as meridians pass through the earth's poles. The heavens, visible and invisible, were thus divided into 12

equal parts, six being above and six below the horizon. These divisions, or "houses," were numbered from 1 to 12, beginning with that which lay in the last immediately below the horizon. The first "house" was the "house" of life; the second, of fortune or riches; the third, of brethren; the fourth, of relations; the fifth, of children; the sixth, of health; the seventh, of marriage; the eighth, of death, or the upper portal; the ninth, of religion; the tenth, of dignities; the eleventh, of benefactors; and the twelfth, of enemies or captivity. See HOUSING.

HOUSE, EDWARD MANDELL, an American statesman; born at Houston, Texas, in 1858, and graduated from Cornell University in 1881. He took an active part in Democratic party affairs in Texas and used all his influence to

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bring about the nomination and election of President Wilson, being his close friend and advisor. During the World War President Wilson frequently sent him on important missions to the various belligerent powers and he became the "eyes and ears" of the President as far as European affairs were concerned. Appointed by the President a member of the United States Commission to negotiate peace with Germany, Col. House spent 1918 and 1919 in Europe. In the spring of 1920 he returned to the United States, but soon again set out on an important diplomatic mission to Europe.

HOUSE FLY, in entomology, *Musca domestica.* The larvæ are called maggots; they live in decaying animal matter.

HOUSELEEK (*Sempervīvum tectōrum,* natural order *Crassulaceæ,* a succulent plant, commonly to be met with on old walls. It bears purplish flowers.

HOUSING, a term which has acquired special significance in this country since the termination of the European War, on account of the scarcity of housing accommodation, caused by the fact that construction had practically ceased; first, on account of the strong demand for labor in the war industries, and second, because of the high prices of building materials. This situation likewise resulted in a rise in rents, sometimes amounting to three or four hundred per cent. over pre-war rates. Many and various are the remedies that have been urged, both through government action and private initiative. One of these was a bill brought before Congress, in 1919, whereby it was proposed to extend substantial loans to the building and loan associations throughout the country, so that these organizations might build homes on a non-profit basis. Another growing movement advocates the formation of co-operative, or co-partnership, building societies, on the same principle as the garden city groups of England. Various States have also considered plans, or have put them into effect. The most notable of these is the law passed by the Legislature of North Dakota, in 1919, by which is established the North Dakota Housebuilders' Association, and which was granted an appropriation of $100,000 for working expenses, and $10,000,000 to be utilized in advancing funds for housebuilders on first mortgages, on the principle of the building and loan associations.

HOUSMAN, ALFRED EDWARD, a British classical scholar. He was born in 1859, and was educated at Bromsgrove School and St. John's College, Oxford. In 1882–1892 he was Higher Division Clerk in the Government Patent Office, and in 1892–1911 Professor of Latin in University College, London. Since 1911 he has been Professor of Latin at Cambridge University and Fellow of Trinity. His works include: "A Shropshire Lad"; "Manilius," Books I., II., III. (edited); "Juvenal" (edited); many papers in "Journal of Philology," "Classical Review," and "Classical Quarterly."

HOUSMAN, LAWRENCE, a British author. He was born in 1865, and started his literary career at an early age. His first book, "The Writings of William Blake," appeared in 1893. His other works include: "A Farm in Fairyland"; "The House of Joy"; "Arthur Boyd Houghton"; "All Fellows"; "Gods and Their Makers"; "Spikenard"; "The Field of Clover"; "The Little Land"; "Rue"; "The Seven Young Goslings"; "An Englishwoman's Love Letters"; "A Modern Antæus"; "Aucassin and Nicolette"; "Bethlehem: A Nativity Play"; "Return of Alcestis"; "The Snow Man"; "The Royal Runaway"; "Lord of the Harvest"; "The Were Wolf"; "Jump to Glory—Jane"; "The Child's Guide"; etc.

HOUSSA, or **HAUSSA** (hous'sa), a region of Africa, in central Sudan. It is under the rule of the Fellatahs, who have subjected the native inhabitants, the Haussana or Haussas, a race intermediate between the negroes and the Berbers. They are intelligent and lively, expert weavers as well as agriculturists, and well acquainted with tanning and working in iron. Their language has become the general medium of commercial intercourse in central Africa. They are Mohammedans. There are two large towns in Houssa—Sokota and Kashua. See SUDAN.

HOUSTON, a city and county-seat of Harris co., Tex.; on Buffalo Bayou, and on the Gulf, Colorado and Santa Fe, the Texas and New Orleans, the International and Great Northern, the Missouri, Kansas and Texas, and several other important railroads; 50 miles N. W. of Galveston. It is connected with Galveston by a ship canal, built by the United States Government and accommodating large steamships. It is the second city in the State in population and commercial importance.

Public Interests.—The city is built on both sides of the bayou, which is crossed by several bridges. The principal buildings are the City Hall and Market House, built of brick, and containing, besides the city offices, the Houston Lyceum; the Cotton Exchange, containing the Texas Geological and Scientific Association; the Masonic Temple; Union Station, William M. Rice Polytechnical Institute; and the Postoffice. The city is lighted by gas and electricity, has an abundant water supply, fire department, electric street railways, two public high schools, and a public library.

Business Interests.—The city ranks first in the State in manufactures. These include oil, furniture, iron castings, cigars, brick, pottery, jewelry, sheet metal, paint, chemicals, medicine, trunks, leather goods, barrels, soap, soda water, etc. There are several railroad machine shops, sugar and pulp mills, and cotton compresses. There are many large banking institutions. The exchanges at the United States clearing house in 1919 amounted to $899,984,000; an increase over the previous year of $92,508,000.

History.—Houston was settled in 1836 and was the capital of the republic of Texas in 1837. Pop. (1910) 78,800; (1920) 138,276.

HOUSTON, DAVID FRANKLIN, an American public official; born in 1866 in North Carolina; he graduated with the degree of Master of Arts from Harvard University in 1892. After teaching in several prominent colleges he became Professor of Political Science at the University of Texas in 1900, a position which he held until he was elected president of the University in 1905. From 1908-1916 he held the position of Chancellor of Washington University, St. Louis. He was appointed Secretary of Agriculture in 1913 by President Wilson. When Secretary Glass resigned from the Treasury Department in 1919 the President appointed Houston to the vacant post.

HOUSTON, SAMUEL, an American statesman; born in Rockbridge co., Va., March 2, 1793; was of Scotch-Irish descent. In 1818 he began the study of

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law; in 1823 and 1825 was elected to Congress; and in 1827 governor of Tennessee. On removing to Texas in 1832 he was made a general of Texas troops.

In 1836 he defeated the Mexicans at San Jacinto, which resulted in the independence of Texas, and he was elected president of the new republic. In 1845 Texas entered the Union, and Houston was chosen United States senator. He was elected governor of Texas in 1859; and was deposed for adherence to the Union in 1861. He died in Huntsville, Tex., July 25, 1863.

HOVEY, EDMUND OTIS, an American geologist; born in New Haven, Conn., in 1862. He graduated from Yale in 1884, and afterward studied in Germany. He served as principal and superintendent of schools for several years and in 1886 was appointed assistant in the mineralogical laboratory of the Sheffield Scientific School. He left this to become principal of the Waterbury, Conn., high school, serving until 1892. In 1894 he was appointed assistant curator of the American Museum of Natural History and in 1910 was made curator of the Geological Department of that institute. He was assistant of the United States Geological Survey in 1890 and again from 1901 to 1906. He published many papers on geological subjects and technical journals. He was also the author of "Martinique and St. Vincent" (1902); "1902–1903 Eruptions of Mt. Pelée" (1903). He was a member of many scientific societies.

HOVEY, RICHARD, an American poet; born in Illinois in 1864. He wrote: "Launcelot and Guenevere"; "Grandolfo," a tragedy; "Songs from Vagabondia"; "More Songs from Vagabondia" (with Bliss Carman); "The Laurel," an ode; "Seaward"; etc. He died in 1900.

HOWARD, one of the oldest families of England. The principal are: THOMAS HOWARD, Earl of Surrey, and third Duke of Norfolk, an eminent statesman and naval and military commander, distinguished at the battle of Flodden, 1488–1554. EDWARD, a younger brother of the preceding, and admiral of England, killed in action with the French in 1512. HENRY, Earl of Surrey, eldest son of Thomas, the first polite writer of love verses in the English tongue, beheaded on a charge of high treason, 1516–1546. HENRY, 2d son of the poet, and Earl of Northampton, a man of letters, implicated in the murder of Overbury, 1539–1614. CHARLES, known as Lord Effingham and Earl of Nottingham, and grandson of the Duke of Norfolk, commander of the channel fleet on the invasion of England by the Spanish Armada, 1536–1624. THOMAS, Earl of Arundel, and earl marshal in the reign of Charles I., diplomatist and antiquary, died 1646. HENRY, his 2d son, and 6th Duke of Norfolk, by whom the Arundelian marbles, collected by his father, were presented to the University of Oxford, about 1668. CHARLES, 11th Duke of Norfolk, and formerly Earl of Surrey, known as a statesman in opposition to Lord North and Pitt, 1746–1815.

HOWARD, BRONSON, an American playwright; born in Detroit, Mich., Oct. 7, 1842. He was connected with several newspapers in New York City, 1867–1872. Among his successful plays are: "Saratoga" (1870); "The Banker's Daughter" (1878); "Young Mrs. Winthrop" (1882); "The Henrietta" and "Met by Chance" (1887); "Shenandoah" (1889); "Aristocracy" (1892); "Peter Stuyvesant" (with Brander Matthews); etc. He died Aug. 4, 1908.

HOWARD, CATHERINE, 5th wife of Henry VIII.; born about 1520, was the daughter of Edmund Howard, 3d son of the second Duke of Norfolk. She was married, in 1540, to the king; but two years afterward he sent her to the scaffold under pretext of unfaithfulness.

HOWARD, FRANCIS, a British artist. He was born in 1874, and was educated at St. Edmund's and St. Augustine's Roman Catholic colleges, and in Germany, at Geneva and Paris. Studied art in Paris and London; was art critic of "Weekly Sun"; and organized in 1898 International Society of Sculptors, Painters, and Gravers. He was art chairman at Jamestown Exposition in 1907, and from that year to 1920 has organized many art exhibitions, in which he has been represented. His publications include: "Illustrated Catalogue of the Second National Loan Exhibition" (woman and child in art), and a large number of biographical and other catalogues.

HOWARD, SIR HENRY, a British diplomat. He was born in 1843, and became attaché in the diplomatic service in 1865. In 1869 he was promoted 3d secretary, in 1873 2d secretary, and in 1885 1st secretary. He became secretary of embassy in 1890, minister plenipotentiary in 1894, and envoy extraordinary and minister plenipotentiary in 1896. He has served in the United States, the Netherlands, Guatemala, Greece, Denmark, China, Russia, and France. He received the Jubilee Medal in 1897 and the Coronation Medal in 1902. In 1896–1908 he was British minister at The Hague and Luxemburg. During the European War he was sent as minister plenipotentiary in British mission to the Pope, remaining from 1914 to 1916.

HOWARD, JOHN, an English philanthropist; born in 1726. His father, a wealthy London tradesman, died when his son was about 19 years of age, and left him an independent fortune. In 1756 Howard undertook a voyage to Lisbon to view the effects of the recent earthquake. The vessel in which he embarked being captured, he was consigned to a French prison. The hardships he suffered and witnessed first roused his attention to the wrongs of prisoners. In 1773 he resolved to devote his time to the investigation of existing abuses in the management of prisons. He visited most of the English county jails and houses of correction, and in March, 1774, he laid the result of his inquiries before the House of Commons. In 1775 and 1776 he visited many Irish, Scotch and continental prisons, and published the result of his investigations. In 1789 he published an "Account of the Principal Lazarettos in Europe." He died of fever in Cherson in South Russia, in 1790.

HOWARD, KATHLEEN, an American opera singer; born in Canada of English parents. She became a naturalized citizen of the United States. She studied in New York and Paris and began her career as a church singer in New York City. After studying opera in Germany she first appeared in Metz, where she at once gained recognition. She sang in other opera companies in several other cities in Germany and in London. She was leading contralto of the Century Opera Company in New York in 1913 and again in 1914–1915. She was a member of the Metropolitan Opera Co. from 1916.

HOWARD, LELAND OSSIAN, an American entomologist; born in Rockford, Ill., in 1857. He graduated from Cornell University in 1877, and took postgraduate courses at Georgetown University. He was appointed assistant entomologist in the Bureau of Entomology in 1878 and was appointed chief of that bureau in 1894. He was honorary curator of the Department of Insects in the United States National Museum from 1895 and was consulting curator of the United States Health Service from 1904. He was permanent secretary of the American Association for the Advancement of Science, and he was a member of many foreign and American scientific societies. His published writings include "The Insect Book" (1902); "Mosquitoes of North America" (1912); together with many pamphlets and monographs.

HOWARD, OLIVER OTIS, an American military officer; born in Leeds, Me., Nov. 8, 1830; was graduated at Bowdoin College in 1850, and at the United States Military Academy in 1854; served in the Seminole War; was instructor in mathematics at West Point, 1857–1861; entered the Civil War as colonel of the 3d Maine Regiment; commanded a brigade at Bull Run, July 21, 1861; became major-general of volunteers, Nov. 29, 1862; commander of the Department of Tennessee in 1864; commissioner of Freedman's Bureau, 1865–1874; peace commissioner to the Indians of Arizona and New Mexico, 1872; brigadier-general in 1864; major-general, U. S. A., 1886; and was retired Nov. 8, 1894. He lectured and wrote: "Nez Perces Joseph"; "Life of Zachary Taylor"; "Isabella of Castile"; "Fighting for Humanity"; etc. He was personal military adviser of President McKinley in the American-Spanish War (1898). He died in 1909.

HOWARD COLLEGE, a coeducational institution in Birmingham, Ala.; founded in 1842, under the auspices of the Baptist Church; reported in 1919: Professors and instructors, 12; students, 422; president, T. H. Eagles, A. B., A. M.

HOWARD UNIVERSITY, a coeducational non-sectarian institution in Washington, D. C.; founded in 1867; reported at the close of 1920: Professors and instructors, 50; students, 1,565; president, J. E. Rankin, D. D., LL. D.

HOWE, EDGAR WATSON, an American editor and author; born at Treaty, Ind., in 1854. He was educated in the common schools of Missouri, and at the age of twelve entered a printing office. He was publisher and owner of several papers and at last became proprietor of the "Atchison Daily Globe," which he made one of the most widely quoted papers in the United States. He continued in this capacity until 1911, when he became editor and publisher of "E. W. Howe's Monthly." He was the author of "The Story of a Country Town"; "A Moonlight Boy"; "The Confession of John Whitlock"; "Daily Notes of a Trip Around the World"; "Country Town Sayings"; and "The Blessing of Business."

HOWE, ELIAS, an American inventor; born in Spencer, Mass., July 9, 1819. He constructed a sewing machine in 1846, and was for several years involved in expensive and harassing lawsuits to establish his right to reap the benefits of his own ingenuity. He died in Brooklyn, N. Y., Oct. 3, 1867.

HOWE, FREDERIC CLEMSON, an American lawyer and public official; born in Meadville, Pa., in 1857. He gradu-

ated from Allegheny College in 1889, and took post-graduate courses at Johns Hopkins University. He afterward studied in Germany and studied law at

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New York Law School. He was admitted to the bar in 1894 and practiced in Cleveland, O., until 1909. From 1911 to 1914 he was director of the People's Institute of New York City, and from 1914 to 1919 was Commissioner of Immigration at the port of New York. While holding this position he was severely criticized for his leniency in relation to the deportation of anarchists and other undesirable aliens. He was the author of "Socialized Germany" (1915); "Why War" (1916). He also contributed much to magazines on economic subjects.

HOWE, HENRY MARION, an American metallurgist; born in Boston, in 1848. He graduated from Harvard in 1869 and studied afterward at the Massachusetts Institute of Technology. He was professor of metallurgy in Columbia University, New York, from 1897 until he became professor emeritus. He was an officer and director in many metallurgical companies, and was a member of many scientific societies, both in the United States and in foreign countries. He received honorary degrees from Harvard, Lafayette, and other colleges. His published writings include: "Copper Smelting" (1885); "Iron, Steel, and Other Alloys" (1903); "Metallography of Steel and Cast Iron" (1916).

HOWE, JOHN IRELAND, an American inventor; born in Ridgefield, Conn., July 20, 1793; was at first a physician, but in 1830 invented a pin-making machine. This he perfected later and revolutionized the pin manufacture with it. He died in Birmingham, Conn., Sept. 10, 1876.

HOWE, JULIA WARD, an American author; born in New York City, May 27, 1819. A philanthropist, interested especially in woman's suffrage; she was the wife of Dr. Samuel G. Howe, the philanthropist, and with him edited the anti-slavery journal, the Boston "Commonwealth." She is best known as the author of the "Battle Hymn of the Republic" (1861), written during a visit

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to the camps near Washington. Among her works, besides several volumes of verse, are: "The World's Own" (1857), a drama; "Life of Margaret Fuller" (1883); "Trip to Cuba" (1860); "Is Polite Society Polite? and Other Essays"; etc. She also wrote: "Later Lyrics"; "Sex and Education," etc. She died Oct. 17, 1910.

HOWE, MARK ANTONY DE WOLFE, an American editor; born in Bristol, R. I., in 1864. He graduated from Lehigh University in 1886. He took post-graduate courses at Harvard, and in 1888 became associate editor of "Youth's Companion," where he remained until 1893. For two years following he was assistant editor of the "Atlantic Monthly," and he later again joined the staff of the "Youth's Companion" and remained there until 1913. From 1917 he was editor of the Harvard graduates' magazine. He wrote much on biological and musical subjects. His books include "Boston, the Place and the

People" (1903); "Life and Letters of George Bancroft" (1908); "Life and Labors of Bishop Hare" (1911); "The Boston Symphony Orchestra" (1914). He edited "Home Letters of General Sherman" (1909). He was a member of the Harvard Volunteers in Europe in 1916.

HOWE, SAMUEL GRIDLEY, an American philanthropist; born in Boston, Nov. 10, 1801. He was graduated at Brown University in 1821, and at the Harvard Medical School in 1824. He served as a surgeon during the Greek War of Independence from 1824 to 1827, organizing the medical staff of the Greek army. In 1831 he went to Paris to study the methods of educating the blind, and, having become mixed up in the Polish insurrection, spent six weeks in a Prussian prison. On his return to Boston he established a school for the blind, his most famous pupil being Laura Bridgman. He also established a school for the training of idiots. In 1851–1853, assisted by his wife, he edited the anti-slavery "Commonwealth," and "The Cretan," for the Greek cause. He died in Boston, Mass., Jan. 9, 1876.

HOWE, SIR WILLIAM, an English general; born Aug. 10, 1729. He was a brother of Admiral Richard Howe and successor of General Gage in the command of the British forces in America. His first exploit was the battle of Bunker Hill (1775), in which he lost one-third of his men present in the action. In August, 1776, he gained the battle of Long Island and took New York City. He obtained an advantage over the Americans at Brandywine in September, 1777, in consequence of which Philadelphia was occupied by his army. At his own request he was recalled in 1778, and was succeeded by Sir Henry Clinton. He died July 12, 1814.

HOWELL, CLARK, an American editor; born in Barnwell co., South Carolina, in 1863. He graduated University of Georgia in 1883. He became connected with the Atlanta "Constitution" in the following year, and on the death of Henry W. Grady, succeeded the latter's position as managing editor. He became editor in chief in 1897. From 1886 to 1891 he was a member of the Georgia House of Representatives and acted as speaker in 1890–1891. He was a member and president of the State Senate from 1900 to 1906. From 1892 he was a member of the Democratic National Committee.

HOWELLS, WILLIAM DEAN, an American author; born in Martin's Ferry, O., March 1, 1837. He learned the printer's trade with his father; was afterward assistant editor on the "Ohio State Journal"; published a life of Abraham Lincoln and a volume of poems; and was appointed in 1861 United States consul at Venice. On his return in 1865 he joined the staff of the "Nation," became editor of the "Atlantic Monthly," editorial contributor to "Harper's Magazine," but made himself known chiefly

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as a writer of novels. Among his works are "Venetian Life," "Italian Journeys," "A Chance Acquaintance," "A Foregone Conclusion,' "The Lady of the Aroostook," "Dr. Breen's Practice," "A Modern Instance," "The Rise of Silas Lapham," "Indian Summer," "Their Silver Wedding Journey," "Literary Friends and Acquaintances," etc. Among his novels may be mentioned "New Leaf Mills" (1913); "Years of My Youth" (1915); "The Leatherwood God" (1916), edited; "Library of Universal Adventure"; etc. The National Institute of Arts and Letters awarded him a gold medal in 1915 for meritorious work in fiction. He died in 1920.

HOWITZER (how'itz-er), a cannon, differing from ordinary guns in being shorter and lighter in proportion to its bore, and used for throwing shells or case-shot only, with comparatively small charges. In the World War (1914–1918) the Germans used extensively heavy howitzers and mortars, especially the 11-inch guns made by Krupp and Eberhardt. These were effective in reducing the Belgian forts, which were not

equipped with sufficiently heavy armament to retaliate. The French employed later the 11-inch Schneider howitzer but not on such a large scale as the Germans, who were also the first to transport guns on wheels and fire from that position. The United States army uses the 3-inch mountain gun, or howitzer, and a 6-inch forms part of heavy field artillery.

HOWLING MONKEY, in zoölogy, *Mycetes*, a genus of *Cedibæ*, and specially *Mycetes ursinus*. The name "howling" is given from the loud and resonant voice. The animals are clumsy in make, heavy in their movement, and hang on trees by their long prehensile tails. They inhabit the warmer parts of the New World. They are the largest monkeys in South and Central America. Called also howlers.

HOWRAH, a town of India, in the presidency of Bengal. It is on the right bank of the Hugli river, opposite Calcutta, of which it forms a suburb. There are manufactures of iron, rope, cottonseed oil, and machinery. It is the seat of the Sibpur Civil Engineering College. Pop. about 180,000.

HOWTH, a town of Ireland, on the peninsula which forms the N. boundary of the bay of Dublin, 8 miles E. N. E. of the city. It is a watering-place much resorted to by the residents of Dublin.

HOWZE, ROBERT LEE, an American army officer; born in Rusk co., Tex., in 1864. He graduated at Hubbard College in 1883 and from the United States Military Academy in 1888. He was made second lieutenant in the same year and served in the cavalry regiment until 1896. He was captain and assistant adjutant-general of volunteers during the Spanish-American War in 1898. After serving in various regiments, he was appointed brigadier-general of volunteers in 1901. He was honorably discharged in the same year. From 1901 to 1904 he was major of the Porto Rico regiment of infantry. From 1905 to 1909 he was commandant of cadets of the United States Military Academy, with the rank of lieutenant-colonel. After further service in Porto Rico and other places he was appointed lieutenant-colonel of cavalry in 1916, and was detailed to the general staff of the 10th Provisional Division and of the cavalry division, and in 1917 was assigned chief of staff of the Northeastern Department. He was brigadier-general in the National army in 1918. He was awarded the Congressional Medal of Honor in 1891 for gallantry in Indian campaigns.

HOXIE, VINNIE REAM, an American sculptor; born in Madison, Wis., Sept. 23, 1847; received an academic education; obtained a government clerkship and turned her attention to sculpture; executed busts of Grant, Sherman, and others and a statue of Lincoln for the National Capitol. Her other works include ideal statues of "Sappho"; "The Spirit of the Carnival"; the heroic statue of Farragut, Washington, and in 1911 she was commissioned to execute a statue of Sequoyah, to represent Oklahoma, for the Hall of Statues at the Capitol. She died in 1914.

HOY, an island of the Orkneys, Scotland, separated from the mainland of Scotland by the Pentland Firth, and from the largest island of the Orkneys, known as Mainland, by the Sound of Hoy. It is about 13 miles long and 6 broad; mountainous and heathy, but with fertile tracts. It has an excellent harbor, Long-Hope. At the S. W. of the island there is a detached pillar of rock 450 feet high, known as the Old Man of Hoy.

HOYLE, EDMOND, an English writer on games; born in 1672. He is said to have been educated for the bar. He lived for some time in London, writing on games and giving lessons in whist, which he invented. In 1742 he published his "Short Treatise on Whist." He died in London, England, Aug. 29, 1769.

HOYT, CHARLES HALE, an American playwright; born at Concord, N. H., in 1860. He was educated in the public schools of Boston and following a period passed in the cattle business in the West, entered newspaper work. For several years he was musical and dramatic critic of the "Boston Post." He turned to the writing of plays and produced a series of farcical comedies which in their presentation of certain phases of American life have never been surpassed. The best known of these are "A Trip to Chinatown" (1890), and "A Milk-White Flag" (1893). He was twice elected a member of the New Hampshire Legislature. He died in 1900.

HOZUMI, BARON NOBUSHIGE, a Japanese statesman and author. He was born in 1855, and was educated at Tokyo University, at Middle Temple, London, and at Berlin University. He became a member of the House of Peers in 1890-92, and with two colleagues drafted the present Japanese Civil Code. He is Privy Counsellor, chairman of the Association of Doctors of Law, chairman of the 1st Section in the Imperial

Academy. His works include: "Ancestor Worship and Japanese Law"; "The New Japanese Civil Codes as Material for the Study of Comparative Jurisprudence"; "Hoten-ron, or Treatise on Codification"; "Inkyo-ron, or Treatise on Retirement from House-headship"; "Goningumi, or System of Mutual Help and Supervision among Five Families."

HRDLICKA, ALES, an American anthropologist, born in Bohemia in 1869. He was educated in his native country, but coming to the United States he studied medicine at the New York Eclectic College and other medical colleges. From 1894 to 1899 he carried on investigations among the insane and other defective classes for New York State. After several years spent in study at Paris and other European cities, he took charge of several expeditions for the American Museum of Natural History. From 1898 to 1903 he was assistant curator in charge of the division of physical anthropology in that institution. From 1901 to 1908 he was assistant editor of the "American Naturalist." He was in charge of several expeditions sent by the American Museum of Natural History for Mexico, and was a member of many scientific societies. His studies on anthropology are regarded as most important.

HSUAN T'UNG, a Chinese emperor and the last of the Manchu line. Selected by the famous Dowager Empress because of his youth so that she could continue her dominance. The Empress died, however, Nov. 15, 1908—the day on which Hsuan T'ung succeeded to the throne, his father being appointed regent. A policy of liberal measures was inaugurated calculated to check the revolt against the dynasty, but it was too late. On Feb. 12, 1912, the emperor was compelled to abdicate, receiving a palace and a pension for life from the new government.

HUALLAGA (wäl-yä'gä), a river of Peru, rising near the Cerro de Pasco, over 14,000 feet above the sea, flowing N. on the E. side of the Central Cordilleras, breaking through the range at the gorge of Chasuta, and entering the Marañon. Its total length is about 650 miles; it is navigable as far as Yurimaguas, above which are falls and rapids.

HUAMALIES (wä-mä-lēs'), or **GUAMALIES** (gwä-), a province of Peru, department of Junin, on the W. side of the central ridge of the Andes; area, about 3,870 square miles. Minerals, mercury and silver. There are ruins of ancient Peruvian temples, palaces, and fortresses.

HUAMANGA (wä-män'gä), or **GUAMANGA** (gwä-), a city of Peru, capital of a province of its own name and of the department of Ayacucho, on a tributary of the Apurimac, about 140 miles N. N. W. of Cuzco. This city was founded by Pizarro in 1539, and in this vicinity, in 1824, Sucre defeated the Spaniards and thereby ended their rule in South America.

HUAMANTLA (wä-mänt'lä), a town of Mexico, State of Tlascala. It was the scene of an engagement, Oct. 9, 1847, between the Mexicans under Santa Ana, and a small force of Americans, in which the former were defeated with considerable loss.

HUANACA (wä-nä'kä), or **GUANACO** (gwä-nä'kō), a species of the same genus with the llama, vicuña, and alpaca, of which some naturalists suppose it to be the wild original. It is found not only on the Andes, but throughout great part of Patagonia. It is of a reddish-brown color, the ears and hind legs gray.

HUANCAVELICA (wän-kä-vā-lē'kā), a department of Peru, entirely within the Cordilleras; area 8,710 square miles; pop. about 225,000. The climate is cold and raw on the mountains, where sheep, cattle, and llamas are herded, and hot in the deep valleys, where sugar is grown. The chief riches are in the mines, especially of silver and quicksilver. The capital, Huancavelica, pop. about 6,500, is a mining town in the Sierras. Most of the inhabitants work in the famous quicksilver mines close by.

HUANUCO (wä'nö-kō), a department of Peru; area 23,000 square miles; pop. about 150,000. Mining and agriculture are the chief industries. The capital, Huanuco, lies in a valley on the Huallaga, amid plantations of coffee and sugar. Pop. about 7,500.

HUANUCO BARK, the gray or silver cinchona bark imported in the form of quills from around Huanuco in Peru. It is the produce of *Cinchona micrantha.*

HUAYNA CAPAC (wä-ē'nä kä'päk), a Peruvian Inca; born in Cuzco, Peru, about 1490; was absolute despot of his country and made many conquests, and in his will divided the empire between two of his sons; was on the throne when the first Spanish expedition invaded Peru. He died in Tumipampa, Ecuador, in 1523.

HUBBARD, ELBERT, an American novelist; born in Bloomington, Ill., in 1859. His home was in East Aurora, N. Y., where he was proprietor of the famous Roycroft shop, devoted to making *de luxe* editions of the classics. He was editor of the "Philistine" and wrote "No Enemy but Himself"; "Little Journeys to the Homes of Good Men and Great"; "Forbes of Harvard"; "One Day"; "Little Journeys to the Homes of Famous Women" (1897); "A Message to Garcia" (1898); "The Man of Sorrows" (1904); "Hollyhocks and Golden Glow" (1912). He died on the "Lusitania," May 7, 1915.

HUBBELL, GEORGE ALLEN, an American educator; born in Springfield, Ohio, in 1862. He graduated from Antioch College in 1890. After teaching in the public schools of Ohio for several years, he became professor and principal of the Normal Department of Antioch College. He remained here until 1898 when he became teacher of English at Erasmus Hall School, in Brooklyn. From 1904 to 1906 he was vice-president and dean of Berea College. After occupying chairs in other colleges he was appointed president of the Lincoln Memorial University at Tennessee, in 1910. He was a member of many scientific and economic societies. He wrote "Guide in the Study of Geography" (1896); "The Child and the Bible" (1900); "Men of the Bible" (1903); "Horace Mann" (1910).

HUBERTSBURG (hō'berts-börg), formerly a royal hunting-seat of Saxony, 25 miles E. by S. from Leipsic, built in 1721 by Prince Frederick Augustus, afterward King Augustus III. of Poland. It was much injured during the Seven Years' War; and there Feb. 15, 1763, was signed the treaty by which that war was ended.

HUBLI (hö'bli), a town of Dharwar in the presidency of Bombay, British India, on a road leading to Karwar on the Malabar coast, 102 miles S. W. It is one of the principal cotton marts in that section of India. Pop. about 70,000.

HUCKLEBERRY, an American name for the whortleberry.

HUDDERSFIELD, a town of England, in Yorkshire, on the Colne, 15 miles S. W. of Leeds. Manufactures narrow and broad cloths, serges, kerseymeres and various fancy goods. Near it are medicinal springs. A U. S. Consulate is located here. Pop. (1917) 105,818.

HUDSON, a city and county-seat of Columbia co., N. Y., on the Hudson river, and on the New York Central and Hudson River, the Boston and Albany, and the Albany Southern railroads; 29 miles S. of Albany. It is the trade center of an extensive farming and manufacturing region and has steamship communications with all Hudson river points. Its manufactures include iron ware, woolen goods, cement, bricks, and machinery. It is the seat of the State Home of Refuge for Women, and has electric lights and street railways, public high school, daily and weekly newspapers, and National banks. Pop. (1910) 11,417; (1920) 11,745.

HUDSON, HENRY, an English navigator; born in England. He entered the service of Holland. After making three voyages to find a N. E. or N. W. passage to China, in the second of which he discovered the Hudson river, he set sail a fourth time, April 17, 1610, in a bark named the "Discovery," and proceeding W., reached in lat. 60° N. the strait bearing his name. Through this he advanced along the coast of Labrador, till it issued into the vast bay which is also called after him. Here, with his son and seven infirm sailors, he was turned adrift by a mutinous crew, and was no more heard of.

HUDSON BAY, an inland sea of British North America, between lat. 51° and 64° N., and lon. 77° and 95° W. Corinthian Gulf, Gulf of Boothia, and Fox Channel connect it with the Arctic Ocean on the N., and Hudson's Strait connects it with Davis Strait on the E. It covers an area of about 510,000 square miles, the S. part of which, embracing about one-fourth of the bay, is called James Bay. Hudson Bay is only navigable during a few months in the year. It was discovered by Henry Hudson.

HUDSON'S BAY COMPANY, an English company, established for carrying on the fur-trade, to which Charles II. in 1670 granted a charter, empowering it to trade exclusively with the aborigines in and about Hudson Bay. Prince Rupert was at the head of the Hudson's Bay Company, and as the fur-trade was then very lucrative, the association soon rose to prosperity. In the winter of 1783, a new company, calling itself the Northwest Fur Company, was established at Montreal, and actively opposed the Hudson's Bay Company. The Earl of Selkirk was then at the head of the old company, and conceived the plan of establishing a colony on the Red river of Lake Winnipeg. The Northwest Company was jealous of this movement; and a war broke out between the servants of the two companies. The companies

wearied of the strife at last, and united under the name of the Hudson's Bay Fur Company. The new company established factories and settlements in various parts. The monopoly of this company ceased in 1859.

HUDSON BAY TERRITORY, under this name is comprised a large proportion of N. W. America, extending from lat. 49° to 70° N., and from Cape Charles, Labrador, to the mouth of the Mackenzie river; area, between 2,000,000 and 3,000,000 square miles. Reindeer, musk-ox, moose-deer or elk, and other kinds of deer, bears, wolves, wolverines, foxes, beavers, otters, raccoons, and other small animals, valuable on account of their skins or flesh, abound. The inhabitants are Esquimaux and Indians. The Europeans settled here who are generally connected with the HUDSON'S BAY COMPANY, (*q. v.*). In 1870 this immense territory was ceded to the Dominion of Canada, and now forms the province of British Columbia and Manitoba and the Northwest Territories. See CANADA, DOMINION OF.

HUDSON RIVER, a river in New York State, and one of the most beautiful and important in America. It rises in the Adirondack Mountains, 4,326 feet above the level of the sea, its headstreams being the outlets of many mountain lakes. At Glen's Falls it has a fall of 50 feet, and soon after, taking a S. course, runs nearly in a straight line to its mouth at New York City. It is tidal up to Troy, 151 miles from its mouth. Below Newburgh, 60 miles from New York, the river enters the highlands, which rise abruptly from the water to the height of 1,600 feet. Here historical associations add to the interest of scenery of singular beauty and grandeur: here was the scene of Arnold's treason and of André's fate; and at West Point, the seat of the United States Military Academy, 8 miles below Newburgh, are the ruins of Fort Putnam, built during the war of independence. Emerging from the highlands, the river widens into a broad expanse called Tappan Zee, which is 4½ miles wide and 13 long. Below, on the right bank, a steep wall of trap rock, called the Palisades, rises from the river's edge. The river from here is known as the North river, and after passing between New York and Hoboken and Jersey City, it falls into New York Bay. Its whole length is about 350 miles, and its principal tributaries are the Sacondaga, Mohawk, and Wallkill. The river, named from the English navigator who explored it in 1609 (see HUDSON, HENRY), is connected by canals with Lakes Erie and Champlain, and with the Delaware river. There are three double-tube tunnels under the North river, one opposite 34th Street, one opposite Washington Square, and one opposite Cortlandt Street. Robert Fulton's first successful experiment in steamboat navigation was made on this river in 1807.

HUÉ (hö-ā′), the capital of Anam, a French protectorate 10 miles from the mouth of the Hué river, or Truongtien. In 1801 it was strongly fortified by French officers. Since the treaty of Hué in 1884 there is a French garrison in Thuanan, the port of Hué. There is little industry in Hué, which has a population with suburbs of about 65,000. See ANAM.

HUEFFER, OLIVER MADOX, a British author. He was born in 1877 and was educated at University College School and on the continent. For a time he acted as war correspondent and became editor of the "Onlooker" and the "Throne." Was connected with different papers in England and the United States. When European war broke out served in the Somme Campaign, being wounded at Thiepval. His works (some under pseudonym of Joe Wardle) include: "Love's Disguises"; "In Arcady and Out"; "Book of Witches"; "A Vagabond in New York"; "The Artistic Temperament"; "Lord of Latimer Street"; "A Scarecrow Emperor"; "Down Stream."

HUELVA (wel′va), a thriving town of Spain; near the confluence of the Odiel and the Tinto; 68 miles W. S. W. of Seville. Fishing and the plaiting of esparto grass are the chief industries. Huelva is the port for the important Rio Tinto copper mines, in British hands, and a shipping place for wine. Tons of copper ore, iron ore, besides manganese, quicksilver, wine, etc., are annually exported. Pop. of town (1917) 34,492. The province of Huelva has an area of 3,913 square miles. Pop. (1917) 340,360.

HUERTA, VICTORIANO, a Mexican soldier and President. Born in 1854 in Mexico and died in the United States in 1917. Descended from Spanish and native races as a boy he entered the army and attracting by his keenness the attention of the high army officers he became a student in the Chapultepec Military College. He took part in the battles which placed Diaz in power in 1876. During the intervening years until 1902 when he conducted a successful campaign against the Indians, General Huerta made himself an authority on the geography of Mexico. He conducted

President Diaz from the capital to Vera Cruz in 1911, and then served under Madero against Orozco and Diaz. In 1913 he deserted the cause of Madero and had himself made Provisional-President. The United States refused to recognize his government or dictatorship and the bad feeling between the two governments led to the occupation of Vera Cruz by the United States marines. Huerta was finally forced out by

GEN. VICTORIANO HUERTA

the successes of the Carranza-Villa troops and left Mexico for Spain in August, 1914. About a year later he entered the United States and purchased a home on Long Island, but later was arrested on the Mexican border and charged with plotting an invasion of Mexico. He died in prison, awaiting trial.

HUESCA (wes'kä'), capital of province of Huesca, Spain; on the Isuela, 55 miles N. E. of Saragossa. Its chief buildings are the cathedral (1400–1515), a beautiful Gothic edifice; the Romanesque church of San Pedro (1150–1241); the university founded in 1354 by Pedro IV.; and a former palace of the kings of Aragon. The Osca of the Romans, where Sertorius was murdered in 72 B. C., Huesca afterward became famous as a seat of learning. Tanning and manufactures of linens are carried on to some extent. Pop. about 12,000. The province of Huesca has an area of 5,848 square miles; pop. (1917) 249,047.

HUET, PIERRE DANIEL (ü-ā'), a French critic and classical scholar; born in Caen, Normandy, in 1630. He was educated at the Jesuits' college at Caen; was appointed in 1670 sub-preceptor under Bossuet to the dauphin, and superintended the celebrated Delphin series (ad usum Delphini) of the Latin classics. Having taken holy orders, he was made Abbot of Aulnai, and subsequently nominated Bishop of Soissons, later exchanged for that of Avranches. He wrote: "Latin and Greek Songs"; "Origin of the Romans"; "Strictures of the Cartesian Philosophy"; "History of the Commerce and Navigation of the Ancients," a book still of great value. He died in Paris, France, in 1721.

HUGGINS, SIR WILLIAM, an English spectroscopist; born in London, England, Feb. 7, 1824. In 1852 he was elected a member of the Microscopical Society, and for some years labored at the study of physiology, animal and vegetable, with the microscope. In 1855 at his private observatory he began the study of the physical constitution of stars, planets, comets, and nebulæ. By researches on the sun's spectra and the spectra of certain comets, he ascertained that the luminous properties of the former are not the same as the luminous properties of the latter. After 1875 he was engaged in photographing the ultra-violet parts of the spectra of the stars. He also determined the amount of heat that reaches the earth from some of the fixed stars. He was president of the Royal Astronomical Society 1876–1878; president of the British Association for the Advancement of Science 1891. In 1874 he became corresponding member of the Paris Academy of Sciences, and three years later corresponding member of the Royal Society of Göttingen. He died May 12, 1910.

HUGH, ST., of Avalon, Bishop of Lincoln; born of noble family in Avalon, Burgundy, about 1135. On his mother's death his father entered a priory at Villarbenoit, carrying with him the boy, then but eight years old. At 19 he was ordained deacon. Ere long he was attracted by the severer discipline of the Grande Chartreuse. Here he remained 10 years, received his priest's orders, and was appointed bursar to the monastery. His fame came to the ears of Henry II., who prevailed on him to accept the government of the struggling Carthusian monastery at Witham in Somersetshire, and summoned him thence in May, 1186, to fill the bishopric of Lincoln. He died in London, Nov. 16, 1200, and was canonized in 1220.

HUGHENDEN, a parish of Buckinghamshire, England, among the Chiltern

Hills, 2 miles N. of High Wycombe. Hughenden Manor, a large brick three-story mansion, mostly modern, was purchased before 1847 by Benjamin Disraeli, Earl of Beaconsfield. The ancient parish church, much restored in 1874, contains a monument to the earl, erected by the queen; and in its vault he lies buried by the side of Lady Beaconsfield.

HUGHES, CHARLES EVANS, an American lawyer and public official; born at Glens Falls, N. Y., Apr. 11, 1862. He was graduated from Brown University in 1881, and from Columbia University in 1884, being admitted to

CHARLES EVANS HUGHES

the bar the same year. He practiced in New York City till 1906, while holding the positions of professor of law at Cornell University, in 1891, and professor at the New York Law School in 1893. Hughes was retained as counsel in the Stevens Gas Commission, in the Armstrong Insurance Commission, and was special assistant to the United States Attorney-General in the coal strike investigation in 1906. He was elected by the Republican party as Governor of New York in 1907 and 1909. In 1910 he resigned to accept an appointment from President Taft on the bench of the U. S. Supreme Court.

In 1916 the Republicans nominated Justice Hughes for the presidency and he resigned from the Supreme Court. During the preliminary campaign for the nomination Justice Hughes refused to be a candidate or in any way express a desire to obtain the nomination. Defeated by Mr. Wilson by a very narrow margin in the election of 1916 Mr. Hughes resumed the practice of law in New York City. During the World War he served as chairman of the Draft Appeals Board, New York City, and as special assistant to the U. S. Attorney General in charge of the aircraft inquiry. He was a member and at times an officer of several legal and patriotic societies, a fellow of Brown University, a trustee of the University of Chicago. He became Secretary of State in the Cabinet of President Harding, March 4, 1921.

HUGHES, RUPERT, an American writer, born in Lancaster, Mo. in 1872. He graduated from Adelbert College in 1892 and took post-graduate courses at Yale. He served as assistant editor on several magazines and then engaged in general writing. He produced a large number of novels. He was a member of the New York National Guard and saw service on the Mexican border. In 1917 he was appointed assistant to the Adjutant General of New York. His best known works are "Empty Pockets" (1915); "Clipped Wings" (1916); "In a little Town" (1917); "We Can't Have Everything" (1917); "What's the World Coming To" (1920). He also wrote several successful plays. He composed and published a volume of songs.

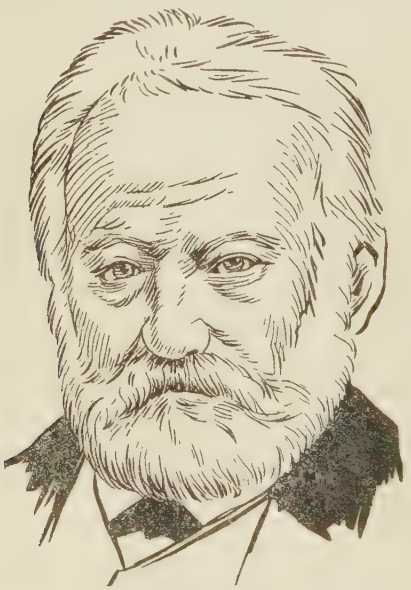
HUGHES, SIR SAM, a Canadian public official. He was born in 1853 at Darlington, Ont., and was educated in the public schools and at Toronto University. He was lecturer in English literature in Toronto Collegiate Institute until 1885, when he purchased the Lindsay "Warder," which he edited till 1897. He was lieutenant-colonel commanding 45th Battalion in 1897, and took an interest in military affairs. As Minister of Militia (1911–1916) he raised Canadian contingent for the World War in 1914–1918, and in 1915 was created K. C. B.

HUGHES, THOMAS, an English author; born in Uffington, Berkshire, England, Oct. 23, 1823. He was educated at Rugby, under Dr. Arnold, and at Oxford. In 1848 he was called to the bar, and in 1869 became a queen's counsel. He is widely known by his novel, "Tom Brown's School-days," a picture of school life at Rugby. It was followed by "Tom Brown at Oxford" (1861); "A Layman's Faith" (1868); "Alfred the Great" (1869). He devoted much of his time to the work of social elevation of the work-

ing-class. In 1865 he was returned as member for Lambeth, and in 1868 for Frome. He died in Brighton, England, March 22, 1896.

HUGHES, WILLIAM MORRIS, an Australian statesman. He was born in Wales in 1864, and was educated in Llandudno, and London. He went to Australia in 1884, engaged in various occupations, was elected to State Parliament for New South Wales in 1894, became Minister for External Affairs in 1904, delegate to Imperial Navigation Conference in 1907, admitted to N. S. Wales bar and became Attorney General 1908–1909, 1910–1913, 1914–1916. He was Prime Minister since 1915, and Minister of Trade and Customs since 1916. During the World War he went to Britain to make known the Australian attitude toward the conflict. He published a work on Federation of Australian States; and "The Case for Labor."

HUGO, VICOMTE VICTOR MARIE (ü-gō), a distinguished French poet, politician, and man of letters; born in Besançon, France, Feb. 26, 1802. His



VICTOR HUGO

father was a colonel in the French army. He received a classical education in a religious house, and, in 1822, brought out the first volume of his "Odes and Ballads"; his tales "Hans of Iceland," and "Bug Jargal," were also written about this time. In 1826 he published a second volume of the "Odes and Ballads," and in 1827 he composed his drama "Cromwell." In 1829 he published his "Last Days of a Condemned Criminal." Hugo prepared a further attack on the classical style of French dramatic literature in his "Hernani," first played at the Théatrê Français in 1830, when it caused a scene of riotous confusion. Shortly after the revolution of July, 1830, his "Marion de Lorme," which had been suppressed by the censorship under the Restoration, was performed with success. "The King Amuses Himself" was also performed at the Théatrê Français in January, 1832, but was interdicted by the Government the day after. His lyrical poems, "The Orientals," published in 1828, and "Autumn Leaves," which appeared in 1832, were received with enthusiasm.

Hugo, who published afterward a number of dramatic pieces of various merit, was, after much opposition, admitted into the Academy in 1841, and was created a peer of France by Louis Philippe. In 1849 he was chosen president of the Peace Congress of which he had been a leading member. On the coup d'état of Dec. 2, 1851, Hugo, then a member of the legislative assembly, was among those deputies who vainly attempted to assert the rights of the assembly and to propose the constitution. His conduct led to his proscription. He took refuge in the island of Jersey, and subsequently in that of Guernsey, having steadfastly refused to avail himself of the general amnesties issued in 1859 and in 1869. He wrote much after he had left France. His very trenchant satire, "Napoleon the Little," appeared at Brussels in 1852, and was rigorously suppressed in France, into which country it had been smuggled. "The Chastisements" was brought out in 1852, also in Brussels; and in 1856 he published, under the title "Contemplations," a collection of lyrical and personal poems which are among his best performances. Hugo's admirable romance, "Notrê Dame de Paris," is known in England and the United States under the title of "The Hunchback of Notrê Dame." His social romance, "Les Misérables" (The Wretched), appeared in 1862. On the fall of the empire in 1870 he returned to France, was elected to the National Assembly, but soon resigned and repaired to Brussels, whence he was expelled by the Government on account of the violence of his political writings and his sympathy with the Communists. Returning to Paris, he was (1876) elected a senator for six years. Of his later works may be mentioned "The Man Who Laughs," "The History of a Crime," and

"The Four Winds of the Spirit," a volume containing some of his most charming lyrics. He died in Paris, May 22, 1885, and was buried in the Pantheon.

HUGUENOT (hū'ge-not), a nickname formerly applied by the Roman Catholics to the Protestants of France, who were nearly all Calvinists, and who converted the appellation into one of honor instead of reproach. D'Aubigné believed that the Reformation began in France in A. D. 1512, while that of Switzerland commenced in 1516, and that of Germany in 1517. For a time France seemed as likely as the other two countries to adopt Protestantism. Though Margaret, the sister of Francis I., had favored it, yet that king had been strongly against it, as were Francis II. and Henry II. It arose among the people, and through their sympathy became so formidable that when, in 1561, a year after the accession of Charles IX., the Huguenots were prohibited from preaching, they took up arms to achieve religious liberty. The struggle went on for the next century and a quarter. Its two most notable incidents were the Massacre of St. Bartholomew and the Revocation of the Edict of Nantes. See BARTHOLOMEW, MASSACRE OF ST.: EDICT OF NANTES.

HUGUENOT SOCIETY OF AMERICA, a patriotic organization having for its purpose the promotion of Huguenot principles, the celebration of events in the history of the Huguenots, and the collection and preservation of documents having relation to the arrival and record of Huguenots in America. The society was organized in New York in 1883 and incorporated in 1885. Membership is in the main confined to descendants of Huguenot families who came to America before the Edict of Toleration of 1787. The principal office of the society is in New York, where the archives are stored, and whence is issued its chief publication. Members are entitled to wear insignia consisting of a badge bearing a device of Margarite de Valois, pendant from a gold dove with wings outspread, and bearing on the reverse the name and society number of the wearer. There are branches of the society in nearly all the States.

HUIA BIRD (*Heteralocha acutirostris*), a remarkable New Zealand starling, now restricted to a few wooded and mountainous regions. The plumage is black, except on the white tips of the tail feathers; there is a wattle at the corner of the mouth; the bill of the female is strikingly different from that of her mate, being long, much curved, and pliant, instead of straight and strong as in the male.

HULL. See KINGSTON-ON-HULL.

HULL, the chief town of Ottawa co., Quebec, Canada, on the Ottawa river, opposite OTTAWA (*q. v.*), with which it is connected by a suspension bridge. It has mills, and manufactures axes, matches, and wooden wares. It was almost entirely destroyed by fire in 1900. Pop. about 20,000.

HULL, ISAAC, an American naval officer; born in Derby, Conn., March 9, 1775. In July, 1812, he commanded the frigate "Constitution." While cruising in the Gulf of St. Lawrence he met the British frigate "Guerrière," which, after a bloody fight of half an hour, surrendered, Aug. 19, 1812. The "Guerrière" was so injured in the battle that she soon sank. The British ship lost 100 men; the "Constitution" had 14 men killed and wounded, and within an hour or so was ready for another fight. This was the first naval battle of the War of 1812, and Congress gave Captain Hull a gold medal for his services. He died in Philadelphia, Pa., Feb. 3, 1843.

HULSEAN LECTURES. The Rev. John Hulse; born in Middlewich, Cheshire, England, in 1708, was educated at St. John's College, Cambridge, and died in 1790, bequeathing his property to Cambridge University for the founding of two divinity scholarships in St. John's College, the Hulsean Prize, the office of Christian Advocate (in 1860 changed into the Hulsean Professorship of Divinity), and that of Hulsean Lecturer or Christian Preacher. The lecturer, appointed annually, must deliver four lectures before the university. The subjects are "The Evidence for Revealed Religion; the Truth and Excellence of Christianity; Prophecies and Miracles; Direct or Collateral Proofs of the Christian Religion, especially the Collateral Arguments; the most difficult Texts or Obscure Parts of Holy Scripture." Among the lecturers have been Trench, Farrar, and Bishop Boyd Carpenter.

HUMANE ASSOCIATION, AMERICAN, a federation of approximately 300 societies which has for its object the prevention of cruelty to children and to animals. It originated in a meeting held in Cleveland, Ohio, in 1877 which had before it the question of providing proper facilities for cattle in transit from West to the East. Owing to the efforts of the society the cars were improved and the former cruelties were

held to be illegal by the courts. It has also interested itself to prevent the abuses of vivisection as practiced in the schools and colleges. The membership of the societies represented in the federation is nearly 150,000.

HUMANE SOCIETY, THE, an association formed in 1774 in London, England, for the purpose of resuscitating those who had been immersed in water and were apparently drowned. At the present time it distributes rewards, consisting of medals, clasps, testimonials, and sums of money, to those who save or attempt to save life from drowning. Also "all cases of exceptional bravery in rescuing or attempting to rescue persons from asphyxia in mines, wells, blast-furnaces, or in sewers where foul gas may endanger life, are recognizable by the society." It likewise gives prizes for swimming to the pupils of public schools and of training-ships. The society is supported by bequests and private subscriptions. Since 1873 the Stanhope gold medal has been awarded "to the case exhibiting greatest gallantry during the year."

HUMANISTS, a party which, during the Renaissance of the 16th century, cultivated literature, especially classical literature. Erasmus is the great type of the humanist, as Luther is of the religious reformer.

HUMANITARIANS, a name assigned to anti-Trinitarians, who regard Christ as a mere man, and refuse to ascribe to Him any supernatural character, whether of origin or of nature. The name Humanitarian is also sometimes applied to the disciples of St. Simon. For the religion of Humanity, see POSITIVISM; UNITARIAN CHURCH.

HUMANITIES, a term for humane or polite literature, including the study of the ancient classics, in opposition to philosophy and science. In the Scotch universities "humanity" is applied to the study of the Latin language and literature alone.

HUMBER, a large river, or rather estuary, on the E. side of England, between the counties of York and Lincoln. At its W. extremity it is joined by the Ouse, after the latter has been augmented by the Derwent and Aire; below Goole it receives the Don, lower down the Trent, and still lower the Hull from the opposite side. It is about 35 miles long, and varies in breadth from 1 to 7 miles.

HUMBER, chief of the Huns, defeated by Locrin, King of England, and drowned in the river Abus, ever since called the Humber.

HUMBERT I., Italian **UMBERTO** (öm-ber′tō), King of Italy; born in Turin, March 14, 1844. He was the eldest son of Victor Emmanuel. In the war of 1866, in which Italy joined Prussia against Austria, he took the field in command of a division, and distinguished himself by his bravery in the disastrous battle of Custozza. In 1868 he married his cousin, Margherita, daughter of Duke Ferdinand of Genoa. He succeeded his father Jan. 9, 1878, and was assassinated in Monza, near Milan, July 29, 1900.

HUMBLE-BEE, in entomology, the genus *Bombus*, called also and more accurately the bumble-bee. Darwin has shown that the humble-bees fertilize various plants by unintentionally brushing off the pollen when they are seeking honey in one flower, and carrying it, adhering to the hairs of their body, till they unwittingly clean it off against the pistil of some other individual of the same species.

HUMBOLDT, a river of Nevada, rising in the N. E. part of the State, and flowing W. S. W. to Humboldt Sink, a lake over 40 miles in circumference, which has no outlet; length, nearly 350 miles. The river is unnavigable even for canoes. The region through which it flows is barren, and the banks are destitute of trees or shrubs.

ALEXANDER VON HUMBOLDT

HUMBOLDT, ALEXANDER VON (höm′bōlt), a distinguished German scientist; born in Berlin, Sept. 14, 1769. From childhood he delighted in zoölogi-

cal, physical, and geographical investigations. At 28, he began the series of voyages memorable in the annals of science. No name is likely ever to stand higher on his country's roll than his. The "Cosmos" is a sufficient proof. This monumental work on the physical universe was published in 4 volumes in 1845, 1847, 1850 and 1858 and immediately translated into all civilized languages. A book is needed to describe the extent of Humboldt's contribution to science. Consult Stoddart's "Life, Travels, and Books of A. von Humboldt."

HUMBOLDT, WILHELM VON, a German philologist, brother of Alexander; born in Potsdam, June 22, 1767. He was educated at Göttingen, and devoted to philological and literary studies; but he had strong practical gifts and elevated social sympathies. In 1789 he visited Paris to study the French Revolution, with which he sympathized; from 1802 to 1819 he was in active official life; minister to Vienna, member of the Privy Council, Secretary of State, ambassador to London, etc.; finally quitting it in disgust at the corruption he would not share. Meantime and later he wrote critiques on Goethe and Homer, and scientific and literary monographs, and translated Æschylus and Pindar. His main work in philology is "On the Kawi Language of the Javanese," but he made other valuable studies of primitive dialects. He died in Tegel, near Berlin, April 8, 1835.

HUME, DAVID, a Scotch historian and philosopher; born in Edinburgh, Scotland, April 26 (o. s.), 1711. Originally designed for the law, he became, in 1734, clerk in a mercantile house at Bristol. Having a strong propensity to literature, for the sake of seclusion he went to France, where he wrote his "Treatise of Human Nature" (1738). This work excited no interest on its first appearance, though it holds an important place in the history of philosophy. Hume's "Essays, Moral, Political, and Literary," appeared in 1742 and 1752, and were favorably received. In 1745 he was invited to reside with the young marquis of Annandale. Here he spent a year; meanwhile the chair of moral philosophy in the University of Edinburgh having become vacant, he became a candidate, but failed. In 1746 he became secretary to General St. Clair, whom he accompanied to the courts of Vienna and Turin. In 1752 appeared at Edinburgh his "Inquiry Concerning the Principles of Morals," which of all his writings is considered the best. In 1754 he published the first volume of his "History of England," which he did not complete till 1761. While this work was in progress he published "The Natural History of Religion." His great work, "The History of England," had now acquired considerable celebrity, and the author gained largely by its popularity, for besides the profits it brought him, he obtained a pension through Lord Bute. In 1763 he accompanied the Earl of Hertford on his embassy to Paris, from whose fashionable and literary circles he received an enthusiastic welcome; and where, in 1765, he remained as *chargé d'affaires*. He became under-secretary of State in 1767. He died in Edinburgh, Scotland, Aug. 25, 1776.

HUME, FERGUS, a New Zealand novelist; born in England, July 24, 1862. He was educated for the law. His first long work, "The Mystery of a Hansom Cab," was published in Melbourne, and later in London, achieving a phenomenal circulation. After the success of his first novel the author devoted himself to literature in London. His most popular publications are "The Piccadilly Puzzle" (1889); "Miss Mephistopheles" (1890); "A Creature of Night" (1891); "An Island of Fantasy" (1894); "The Dwarf's Chamber" (1896); "The Indian Bangle" (1899); "Jonah's Luck" (1906); etc.

HUME, MARTIN ANDREW SHARP, an English historian; born in London, in 1847. He was educated in Madrid and was for a time editor of the Spanish State Papers in the Public Record Office in London. He served in the Turkish campaigns in 1897 and afterward traveled extensively in South America. His most important works are "Philip II. of Spain" 1897); "Modern Spain, 1788–1898" (1899); "The Love Affairs of Mary Queen of Scots" (1903); "Queen Elizabeth and her England" (1910). He died in 1910.

HUMERUS (hū'-), in human anatomy, the long bone of the arm, consisting of a shaft, an upper extremity articulating with the glenoid cavity of the scapula, and an inferior articulating with the radius and the ulna. In comparative anatomy, the bone of the upper arm in the vertebrata.

HUMMING BIRD, or **HUMBIRD,** one of the *Trochilidæ*, a family of birds, tribe *Tenuirostres*. The bill is long and slender, the tongue bifid and tubular, the wings very long, the toes long and slender. The plumage of the males is of the most lively colors, often with extremely beautiful metallic reflections; the fe-

males are of more somber tint. The species are exceedingly diminutive. They hover over flowers, using their long tongues to lick up, not merely the honey, but also small insects. Their flight is so rapid as to elude the eye. The whole family are peculiar to the New World. There some have a wide range, as *Melisuga kingii* (*Trochilus flammifrons*), which is found on the W. coast from Lima to the Tierra del Fuego, a distance of about 2,500 miles; others are limited in their range, some being West Indian only, and others Mexican.

HUMMING-BIRD BUSH, in botany, *Æschynomene montevidensis.*

HUMMING-BIRD HAWK-MOTH, *Macroglossa stellatarum.* The fore wings are smoky black, with a central black dot, a waved black line on each side of it, and indistinct black clouds toward the base; the hind wings are tawny with the base blackish-brown, and the hind margin reddish-brown. The body is brownish, varied posteriorly with black and white.

HUMOR, in anatomy, etc., a liquid, a fluid. See AQUEOUS HUMOR.

In mental philosophy, a mental faculty which tends to discover incongruous resemblances between things which essentially differ, or essential differences between things put forth as the same; the result being internal mirth or an outburst of laughter. Wit does so likewise, but the two are different. Humor has deep human sympathy, and loves men while raising a laugh against their weaknesses. Wit is deficient in sympathy, and there is often a sting in its ridicule. Somewhat contemptuous of mankind, it has not the patience to study them thoroughly, but must content itself with noting superficial resemblances or differences. Humor is patient and keenly observant, and penetrates beneath the surface; while, therefore, the sallies of wit are often one-sided and unfair, those of humor are, as a rule, just and wise.

HUMPBACKED WHALES, or **HUMPBACKS**, the cetaceous genus *Megaptera.* The flippers are one-fifth to one-third the length of the body. They are akin to the finners, but are shorter and more robust. A specimen of *M. longimana*, taken near Newcastle, and described by Dr. Johnston, of Berwick, was named Johnston's humpbacked whale. It is called also *Balænoptera boops.*

HUMPERDINCK, ENGELBERT (hŏm'perdink), a German composer; born in Siegburg, near Bonn, Sept. 1, 1854. After studying music at Cologne, Frankfort, Munich, etc., and travels in France, Spain, and Italy, he taught in the conservatoriums of Barcelona and Cologne, and was musical adviser to a publishing firm in Mainz. Wagner summoned him to assist in the production of that master's only symphony; and it was he who prepared and coached the first cast of "Parsifal" at Baireuth (1882). He subsequently settled in Frankfort (1890), and became famous as the author of the phenomenally successful children's opera or musical fairy play, "Hänsel and Gretel" (1894), which was followed by "The Snow Maiden"; "The Royal Children"; "Die Marketenderin" (1914); etc. He also wrote incidental music to Shakespeare's "Tempest," Maeterlinck's "Blue Bird," etc., and many choruses.

HUMPHREYS, ALEXANDER CROMBIE, an American engineer and educator; born in Edinburgh, Scotland, in 1851. He came to the United States in 1859 and after several years spent in business he graduated from the Stevens Institute of Technology in 1881. He served as chief engineer for several gas companies, and from 1892 to 1908 was head of the gas company in London, with branch offices in New York. He made various important inventions in the manufacture of water gas. In 1902 he was elected president of the Stevens Institute of Technology. He published several lectures on engineering practice.

HUMUS, a substance which occurs in vegetable mold, and in liquids containing decomposing vegetable matter. Humus as it exists in the soil is a product of the decay of vegetables. It is a mixture of various carbon compounds, which slowly undergo combustion with the production of carbon dioxide, water, and ammonia, which are again taken up by plants.

HUNAN, a province of China, with an area of 83,380 square miles. It is traversed by important rivers, chief of which is the Kiangsi. The soil for the most part is fertile, and the agricultural products are tea, rice, hemp, and tobacco. Hunan is one of the largest tea-growing regions of China. There are valuable mines of coal and other metals. The population of the province is about 24,000,000. The capital is Changsha.

HUNDRED, a division of a county in England, supposed to be named from originally containing 100 families or freemen. A long hundred, a great hundred, the sum or number of 120.

HUNDRED DAYS, the period between March 20, 1815, the day on which Napoleon I. entered Paris after his escape from Elba, and June 29 of the same year, when he left it finally.

HUNDRED-WEIGHT, in avoirdupois weights, a weight containing by the legal standard in England 112 pounds. In the United States it is 100 pound avoirdupois. It is subdivided into four quarters. It is usually written cwt. Twenty hundred weights make one ton. An English long hundred-weight is 180 pounds.

HUNDSRÜCK, an extensive and mountainous district of Rhenish Prussia, thickly wooded, and rising, at intervals, to a height of 3,000 feet. It lies between the Moselle and the Nahe, and joins the mountain chain of the Vosges.

HUNEKER, JAMES GIBBONS, an American critic and writer; born in Philadelphia in 1860. He was educated in the public schools and studied law in Philadelphia. He afterward studied music in Paris and for ten years was a teacher of piano at the National Conservatory of New York. He served as dramatic critic for several New York papers, including the "Sun" and the "Times." He wrote "The Man and His Music" (1900); "Egoists—A Book of Supermen" (1909); "The Pathos of Distance" (1913); "Unicorns" (1917). He died Feb. 9, 1921.

HUNGARY. See AUSTRIA-HUNGARY.

HUNGARY BALSAM, a kind of turpentine procured from *Pinus Pumilio*, the mountain pine of Hungary.

HUNGARY WATER, a distilled water consisting of dilute alcohol aromatized with the tops of flowers of rosemary or other aromatic substances, used as a perfume; so called because first made for the use of a queen of Hungary.

HUNGER. See FASTING.

HUNGERFORD, a town of Berkshire, England; partly also in Wiltshire; on the Kennet river, 26 miles W. S. W. of Reading. It is a hunting center, and a favorite resort of anglers. In the town hall (1870) is preserved a horn given to the town by John of Gaunt in 1362.

HUNGERFORD, MRS. MARGARET (HAMILTON ARGLES) ("The Duchess"), an Irish novelist; born about 1855. The daughter of an Anglican clergyman, she was left a widow with a young family to support, whereupon she took to literature. She wrote: "Phyllis" (1877); "Molly Bawn" (1878); "Airy Fairy Lillian" (1879); "Beauty's Daughters" (1880); "Mrs. Geoffrey" (1881); "Faith and Unfaith" (1881); "Portia" (1882); "Rosmoyne" (1883); "O Tender Dolores" (1885); "In Durance Vile" (1885); "Lady Branksmere" (1886); "Lady Valworth's Diamonds" (1886); "A Modern Circe" (1887); "The Duchess" (1887); "Undercurrents" (1888); "Hon. Mrs. Vereker" (1888). She died in Bandon, Cork co., Jan. 24, 1897.

HUNGRY HILL, a mountain of Ireland, in Cork, 16 miles W. N. W. of Bantry. On the top of the mountain is a lake, whence the waters descend in a series of cascades, one falling nearly 700 feet.

HUNS, the name given to several nomadic Scythian tribes which devastated the Roman Empire in the 5th century. They inhabited the plains of Tartary, near the boundaries of China, many centuries before the Christian era. It was in order to put a stop to the continual aggressions of the Huns that the great wall of China was built; and after this the Huns split up into two separate nations, named respectively the Northern and the Southern Huns. The first-mentioned went W. to the Volga, where they encountered the Alanni, whom they defeated. Here the Huns remained for about two centuries; but, under the Emperor Valens, they crossed the Bosphorus; afterward invading Rome, under their leader Attila. After the death of Attila the Huns broke up into separate tribes, and were driven back by the Goths beyond the Tanais. The Hungarians of the present day are the descendants of Huns, who once more immigrated into Europe. The name was applied to the Germans by their opponents in the European War (1914–18).

HUNSTANTON, a watering-place of Norfolk, England, on the Wash, 18 miles N. E. of King's Lynn. It has a broad beach of firm sand, and a splendidly decorated church (1330). Hunstanton Hall, dating from the Tudor period, but greatly injured by fire in 1583, was the seat of Sir Roger L'Estrange.

HUNT, GAILLARD, an American writer and historian; born in New Orleans, La., in 1862. He was educated at the Hopkins Grammar School in New Haven and the Emerson Institute in Washington. From 1900 to 1909 he served as chief of the Bureau of Citizenship at the Department of State, and from 1909 was chief of the Division of Manuscripts, Library of Congress. He was a member of many committees appointed to investigate matters of citizenship. He was a lecturer on nationality

in George Washington University and also lecturer at Johns Hopkins University. He was a member of many historical societies. His published writings include a history of "The Seal of the United States" (1909); "The Department of State: Its History and Functions" (1914); "Life in America One Hundred Years Ago" (1914). He also wrote the lives of Calhoun and Madison, and other American statesmen. He edited "The Writings of James Madison" and "The Journals of the Continental Congress." He also edited James Madison's "Journal of Debates in the Constitutional Convention" (1917).

HUNT, JAMES HENRY LEIGH, an English poet and essayist; born in Southgate, Middlesex, England, Oct. 19, 1784. He was the personal friend of Byron, Shelley, Hazlitt, Lamb, and Coleridge. In 1811 he was tried and acquitted for some remarks on the subject of flogging in the army, published in the "Examiner," a journal which he had founded. He was afterwards sentenced, with his brother, to a fine of $2,500 and two years' imprisonment for an alleged libel against the prince regent. Offers to remit these penalties on a promise to refrain from similar expressions for the future were firmly rejected. "The Story of Rimini" is his longest and perhaps his best known poem; and among his miscellaneous works may be mentioned his autobiography, and his essays, entitled "Men, Women, and Books"; "Imagination and Fancy"; "Wit and Humor"; etc. He died in Putney, England, Aug. 28, 1859.

HUNT, RICHARD MORRIS, an American architect; born in Brattleboro, Vt., Oct. 31, 1828; finished the study of his profession in Paris; and was employed on the extension of the National Capitol. Among the structures designed by him are the Presbyterian Hospital, Lenox Library, the William K. Vanderbilt mansion, the "Tribune" Building, etc., in New York City; the Yorktown Monument, Va.; the pedestal of the "Statue of Liberty," on Bedloe's Island, New York harbor; etc. He died in Newport, R. I., July 31, 1895.

HUNT, THOMAS STERRY, an American chemist and geologist; born in Norwich, Conn., Sept. 5, 1826. He was for a period assistant to the elder Silliman at Yale College; 1847 to 1872 was chemist and mineralogist to the Canadian Geological Survey; Professor of Chemistry at Laval University (1856–1862) and at McGill University (1862–1868); 1872–1878 Professor of Geology in the Massachusetts Institute of Technology. In organic chemistry his name is identified with a system essentially his own, and his researches into the composition of rocks were of great importance. In 1859 he invented the green ink with which greenbacks are printed. He was made an officer of the Legion of Honor in 1867, and received a fellowship of the Royal Society (1859), and the degree of LL.D. from Cambridge (1881). He published several works on chemistry and mineralogy. He died in New York City, Feb. 12, 1892.

HUNT, WILLIAM HOLMAN, an English painter; born in London, England, in 1827. He was trained in the Royal Academy school, and began to exhibit in 1846. He belongs to the so-called PRE-RAPHAELITE (*q. v.*) school of English artists. In 1853 his "Claudio and Isabella" first attracted public attention, followed next year by the "Light of the World." He then made a journey to the East, the fruits of which are observable in his succeeding pictures: "The Scapegoat" (1856); "The Finding of the Saviour in the Temple" (1860); "Shadow of the Cross" (1873); "Plains of Esdraelon" (1877); "Triumph of the Innocents" (1885). Outside of Biblical subjects Mr. Hunt painted: "Isabella and the Pot of Basil"; "After-Glow"; "Festival of St. Swithin"; etc. He died Sept. 7, 1910.

HUNTER COLLEGE, an institution for the education of women, in New York City, founded as the New York Normal School, in 1870. It received its present designation in honor of President Hunter, who was its head for nearly 50 years. There were in 1919 112 instructors and 1,277 students. The president was G. S. Davis, LL. D. The college is supported chiefly by appropriations from the city.

HUNTER, DAVID, an American military officer; born in Washington, D. C., July 21, 1802; was graduated at the United States Military Academy in 1822; assigned to frontier duty; promoted captain in 1833; resigned from the army in 1836 and settled in Chicago; reentered the army in 1842 as paymaster with the rank of major. On May 17, 1861, he was appointed brigadier-general of volunteers and a few months later major-general. He was given command of the Department of the South in March, 1862, and recruited and organized in South Carolina the first negro regiment in the Union army. He was transferred to the Department of West Virginia in May, 1864; defeated the Confederates at Piedmont, June 5, 1864; was

chairman of the commission which tried the conspirators against the life of President Lincoln; brevetted major-general, U. S. A., March 13, 1865, and was retired on account of age, July 31, 1866. He died in Washington, D. C., Feb. 2, 1886.

HUNTER, JOHN, a British surgeon and physiologist; born in Long Calderwood, Lanarkshire, Scotland, Feb. 13, 1728. He went as assistant to his brother William, a prosperous surgeon in London. In 1756 he was appointed house-surgeon at St. George's Hospital. In 1760 he became staff-surgeon and went with the army to Portugal. In 1768 he was appointed surgeon to St. George's Hospital; in 1790 surgeon-general to the army, and inspector-general of hospitals. Hunter contributed greatly to the development of English surgery, as well as to the advance of anatomy and physiology. One of his chief works was "The Blood, Inflammation and Gunshot Wounds" (1794). His museum was purchased by the Government and presented to the Royal College of Surgeons. He died in London, England, Oct. 16, 1793.

HUNTER, WILLIAM, a British anatomist and obstetrician, elder brother of John Hunter; born in Long Calderwood, Lanarkshire, Scotland, May 23, 1718. Originally educated for the Church at Glasgow University, he studied medicine for one session (1740–1741) at Edinburgh, and went through a long training in anatomy at St. George's Hospital, London. In 1747 he was admitted a member of the Corporation of Surgeons, ultimately confining his practice to midwifery. In 1764 he was appointed physician-extraordinary to Queen Charlotte. Elected a Fellow of the Royal Society, he in 1768 became Professor of Anatomy to the Royal Academy. His museum was bequeathed to his brother-in-law, Dr. Baillie, and after him, with an endowment of $400,000, to Glasgow University. He wrote: "An Anatomical Description of the Human Gravid Uterus and Its Contents." He died in London, England, March 30, 1783.

HUNTER, FORT, a defensive work at the confluence of the Mohawk river and Schoharie creek, N. Y., where many severe conflicts took place during the Revolutionary and the French-Indian Wars.

HUNTING, in ordinary language, the act or practice of hunting game or wild animals; the chase as a means of livelihood or for sport. In campanology, a term in change-ringing.

HUNTINGDON, a borough and county-seat of Huntingdon co., Pa.; on the Juniata river, and on the Pennsylvania and the Huntingdon and Broad Top Mountain railroads; 202 miles W. of Philadelphia. It is the farming and mining trade center of the county; has coal mines, and stove, hosiery, sewer-pipe, and furniture factories. It is the seat of Juniata College, Orphans' Home, and State Industrial Reformatory. There are electric lights, public high school, daily and weekly newspapers, and National banks. Pop. (1910) 6,861; (1920) 7,051.

HUNTINGDON, SELINA, COUNTESS OF, an English reformer, daughter of Washington Shirley, 2d Earl Ferrers; born Aug. 24, 1707. She married the Earl of Huntingdon in 1728, and became a widow in 1746. Adopting the principles of the Calvinistic Methodists, she made the famous George Whitefield one of her chaplains, and assumed a leadership among his followers, who came to be known as "The Countess of Huntingdon's Connection." For the education of ministers she established and maintained a college at Trevecca; and built, or became possessed of, numerous chapels, the principal one being at Bath. She died June 17, 1791.

HUNTINGDONSHIRE, an east-midland county of England, with an area of about 365 square miles. It is almost agricultural or pasture land, producing most of the standard vegetables. There are manufactures of paper, parchment, and tile. Pop. about 56,000. The capital is Huntingdon.

HUNTINGTON, a city and county-seat of Huntington co., Ind.; on both sides of the Little river, and on the Wabash, the Cincinnati, Bluffton and Chicago, and the Erie railroads; 48 miles E. of Logansport. It is in the center of a large coal mining and lime burning region, and has abundant water power, used in railroad repair shops, lime and cement works, bicycle, shoe, plow, and barrel factories. It has electric lights, public library, public high schools, daily and weekly newspapers, and a National bank. Pop. (1910) 10,272; (1920) 14,000.

HUNTINGTON, a city in Cabell co., W. Va.; on the Ohio and Guyandotte rivers, and on the Chesapeake and Ohio, and the Baltimore and Ohio railroads; 52 miles W. of Charleston. It has steamship communications with all important river ports, and extensive manufactures of railway cars, brick, machinery, ice, etc., and the shops of the Chesapeake

and Ohio railroad. It is the seat of Marshall College, the State Normal School, and the Douglas Colored High School, and has electric lights and street railways, daily and weekly newspapers, and National banks. It was named after the late Collis P. Huntington. Pop. (1910) 31,161; (1920) 50,177.

HUNTINGTON, ARCHER MILTON, an American writer, born in New York City in 1870. He was educated privately in New York and Spain. He was a son of Collis P. Huntington, and devoted a part of his great wealth to the foundation of the Hispanic Society of America to which he gave a magnificent building. He was a member of many foreign and American societies. He edited "The Poem of the Cid" (3 vols., 1897) and various other works. He contributed to magazines on Spanish-American subjects.

HUNTINGTON, COLLIS POTTER, one of the earliest American railroad builders; born in Connecticut in 1821. He started at the age of 15 as a peddler of clocks in the South and West. In 1848 he joined the rush to California and eleven years later he was one of the leading promoters of the Central Pacific railway. In 1881 Huntington, with Leland Stanford, built the Southern Pacific and Chesapeake and Ohio railroads. His enormous fortune, accumulated in these successful ventures, was partly used to further Indian and negro education. At his death in 1900 he bequeathed his valuable collection of paintings to the Metropolitan Museum in New York.

HUNTINGTON, DANIEL, an American painter; born in New York City, Oct. 14, 1816. He studied at Hamilton College. After a visit to Europe in 1839 he returned to New York and devoted himself to portraits, but he executed a great number of genre and historical pieces. In 1862–1869 he was president of the National Academy, and again in 1877–1891. Among his later works are "Philosophy and Christian Art" (1878), and "Goldsmith's Daughter" (1884). "Mercy's Dream," in the Corcoran Gallery, Washington, is one of his most notable works. He painted portraits of Presidents Lincoln and Grant, and Senator John Sherman. He died April 18, 1906.

HUNTINGTON, ELLSWORTH, an American scientist and explorer; born in Galesburg, Ill., in 1876. He graduated from Beloit College in 1897 and afterward took post-graduate courses at Harvard. He carried on explorations in Turkey and Mesopotamia from 1897 to 1901. In 1903 and 1904 he was research assistant for the Carnegie Institute in Russian Turkestan. This was followed by explorations in Chinese Turkestan, India, China, and Siberia. He was instructor of geography at Yale from 1907 to 1910, assistant professor from 1910 to 1915, and research associate from 1917. He was a member of many geographical and scientific societies. He was the author of "Explorations in Turkestan" (1905); "The Pulse of Asia" (1907); "Palestine and Its Transformation" (1911); "Civilization and Climate" (1915); "Red Man's Continent" (1919).

HUNTINGTON, FREDERIC DAN, an American clergyman; born in Hadley, Mass., May 28, 1819. In early life as a Unitarian minister he held a pastorate in Boston from 1842 to 1855, when he became Plummer Professor of Christian Morals in Harvard University. In 1860 he withdrew from the Unitarian denomination, was ordained in the Protestant Episcopal Church, and in 1869 was consecrated Bishop of Central New York. His writings include: "Christian Believing and Living" (1860); "Steps to a Living Faith" (1873); "Personal Christian Life in the Ministry" (1887); "Forty Days with the Master" (1891). He died at Hadley, Mass., July 11, 1904.

HUNTINGTON, WILLIAM EDWARDS, an American educator, born in Hillsboro, Ill., in 1844. He served throughout the Civil War and in 1870 graduated the University of Wisconsin. He took post-graduate courses at other colleges. In 1868 he was ordained as a Methodist minister. After serving as pastor in several churches in Massachusetts he was appointed dean of the College of Liberal Arts at Boston University. From 1904 to 1911 he was president of that institution, and from 1911 to 1917 was dean of the Graduate Department.

HUNTSVILLE, town and county-seat of Madison co., Ala., on the Nashville, Chattanooga and St. Louis, and the Southern railroads; 131 miles S. of Nashville, Tenn. It is a summer and winter resort and the seat of Goodrich Training School, State Agricultural and Mechanical Institute for Negroes, and Lowry and Westmoreland Infirmary. Its manufactures include cotton, cottonseed oil, flour, and sawmill products. There are daily and weekly newspapers, public high school, National banks, and

an assessed valuation of $3,000,000. Pop. (1910) 7,611; (1920) 8,018.

HUNYADY, JÁNOS (hön'yä-di), a great Hungarian soldier; born in Hunyad, Transylvania, in 1387. His life may be succinctly described as one unbroken crusade against the Turks. He became voivode of Transylvania in 1442, and regent of Hungary on the death of Ladislaus I. of Poland in 1444. The principal moments in his celebrated contest with the foes of Christendom are his expulsion of them from Transylvania in 1442; his brilliant campaign S. of the Danube in 1443; his defeat in the bloody battle of Varna, 1444; and that of Kossovo in 1448; but his most glorious achievement was the storming of Belgrade (1456). During the minority of Ladislaus V. he acted as governor of the kingdom (1445–1453). Hunyady left two sons, Ladislaus and Matthias—the former of whom was beheaded at Buda on a charge of conspiracy; the latter succeeded to the crown of Hungary. He died in Semlin, Croatia-Slavonia, Aug. 11, 1456.

HUNZA-NAGAR, the valley (containing the forts of Hunza and Nagar) of a river running into the Gilgit, at the extreme N. W. corner of Kashmir. Together with Kanjut, the upper part of the same valley, it became British in 1891.

HUON ISLANDS, a group 170 miles N. W. of New Caledonia, in the Pacific Ocean. They belong to France, and are among the Australasia and Oceania dependencies administered from New Caledonia. They are most barren, and few Europeans live there.

HURD, ARCHIBALD, a British author. He was born in 1869 and was educated in the London board schools, after which he became connected with various London papers. Since 1899 he has been on the editorial staff of the "Daily Telegraph," contributing articles, chiefly on naval topics, to the English reviews. His books include: "Naval Efficiency, the War-Readiness of the Fleet," "German Sea-Power: Its Rise, Progress, and Economic Basis"; "The Command of the Sea"; "The New Empire Partnership"; etc.

HURD, RICHARD, an English clergyman and author; named the "Beauty of Holiness" on account of his comeliness and piety; born in Congreve, Staffordshire, England, Jan. 13, 1720. He studied at Emmanuel College, Cambridge, of which he became a Fellow in 1742. In 1749 appeared his first notable production, "Commentary on Horace's Ars Poetica." In 1750 he was appointed one of the Whitehall preachers. He became Bishop of Lichfield and Coventry in 1774, but exchanged this see for Worcester in 1781; in 1783 he declined the archbishopric of Canterbury. His principal works are: "Dissertations on Poetry" (1755–1757); "Dialogues on Sincerity, Retirement, the Golden Age of Elizabeth, and the Constitution of the English Government" (1759), his most popular book; "Letters on Chivalry and Romance" (1762); "Dialogues on the Uses of Foreign Travel" (1764); and "An Introduction to the Study of the Prophecies Concerning the Christian Church" (1772). He died May 28, 1808.

HURDWAR or **HAREDWARA** (hurdwâr'), a town of India, in Bengal, on the right bank of the Ganges, where the river emerges from the foot-hills of the Himalayas into the plains of Hindustan, 36 miles from Seharunpoor. From its position on this stream, esteemed so sacred by the Hindus, immense numbers of pilgrims are annually attracted hither. Every 12th year fully 2,000,000 come partly from purposes of devotion, and partly to trade in camels, horses, cattle, drugs, fruits, etc.

HUREAULITE, a hydrous phosphate of the oxides of iron and manganese, occurring in small, yellow, reddish, or nearly colorless crystals, at Limoges, commune of Hureaux, France.

HURLEY, EDWARD NASH, an American public official. He was born at Galesburg, Ill., in 1864, and was educated in the public schools. He was railroad engineer till 1888, in which year he became manager of the U. S. Metallic Packing Co., in Philadelphia. He originated the pneumatic tool industry, and in 1896–1902 was head of the Standard Pneumatic Tool Co., Chicago. Sold out interests and engaged in farming and stock raising at Wheaton, Ill., 1902–1908. In 1908–1915 was president of Hurley Machine Co., Chicago. Appointed in 1913 U. S. Trade Commissioner to Latin American republics, and became chairman of the Federal Trade Commission in 1917. In 1917 he was appointed chairman of the United States Shipping Board and was president of the Emergency Fleet Corporation. He retained those positions till 1919. He was author of "The Awakening of Business."

HURON, a city of South Dakota, the county seat of Beadle co. It is on the Chicago and Northwestern and the Great Northern railroads. It is the center of an important agricultural and stock-

raising region and is the division headquarters of the Northwestern railroad. It has flour mills, machine shops, grain elevators, and other industries. It is the seat of Huron College and has a high school and public buildings. Pop. (1910) 5,791; (1920) 8,302.

HURON, LAKE, one of the five great lakes of North America, belonging to the basin of St. Lawrence, second in size only to Lake Superior, and intermediate in position between that lake and Michigan, on the N. W. and W., and Lakes Erie and Ontario, on the S. and S. E. It is of a somewhat triangular shape, surrounded W. and S. W. by the State of Michigan, and all the other sides by the Province of Ontario, and divided into two unequal parts by a long peninsula and the Manitouline chain of islands, the parts to the N. and E. of which are called North Channel and Georgian Bay. The total length of Lake Huron, N. to S., is estimated at 280 miles, and its greatest breadth about 190 miles; area, estimated, 25,000 square miles. Elevation above the surface of the ocean, 596 feet. Greatest depth toward its W. shore at least 1,000 feet, and its mean depth is estimated at 900 feet, or about 300 feet below the level of the Atlantic. In various parts it abounds with islands, their total number being said to exceed 32,000, the largest, Manitoulin, "Evil Spirit" Island, nearly 90 miles long, and in one part almost 30 miles wide. Lake Huron receives the superabundant water of Lake Superior by the river St. Mary, at its N. W. angle, and those of Michigan at Michilimackinac; and discharges its own toward Lake Erie by the St. Clair at its S. extremity. Lakes Nipissing and Simcoe communicate with it by the French and Severn rivers.

HURONIAN ROCKS, the name given by Sir William Logan to a series of strata lying in the vicinity of Lake Huron. They consist chiefly of quartzite with great masses of greenish chloritic schist, sometimes containing pebbles derived from the Laurentian rocks. The Huronian rocks are about 18,000 feet thick.

HURONS, a once powerful tribe of American Indians, belonging to the Huron-Iroquois family. In the early part of the 17th century the Hurons numbered about 30,000 persons, living in 25 villages within a small territory near Georgian Bay. By the end of the century the tribe had been nearly destroyed by the Iroquois, famine, and disease; and in 1693 the few survivors were removed by the French to Jeune Lorette, near Quebec. Here 200 or 300 descendants still live.

HURST, FANNIE, an American writer; born in St. Louis, in 1889. She graduated from Washington University in 1909 and carried on post-graduate studies at Columbia. She made a special study of the stage and shop girl and other women workers, and her stories of life in these circles won her quick and wide reputation. Her published writings include: "Just Around the Corner" (1914); "Gaslight Sonatas" (1916). She also wrote several plays, including "The Land of the Free" (1917); "The Good Provider" (1917). She contributed much to magazines.

HURST, JOHN FLETCHER, an American Methodist clergyman; born near Salem, Md., Aug. 17, 1834. He studied theology in Halle and Heidelberg, Germany, and became bishop in the Methodist Episcopal Church in 1880, and chancellor of the American University in 1891. He wrote: "Literature of Theology"; "History of Rationalism"; "Martyrs to the Tract Cause"; "Life and Literature in the Fatherland"; "Outline of Church History"; "Bibliotheca Theologica"; "Short History of the Christian Church"; "Indika"; "History of the Christian Church" (1897); etc. He died in Washington, May 4, 1903.

HURT, or **HEURT**, in heraldry, an azure or blue rondle; supposed by some to represent a hurt or wound, by others the hurtle-berry, whence the name is derived.

HUSBANDRY, PATRONS OF, a combination, society, or association of farmers for the promotion of the interests of agriculture, by abolishing the restraints and burdens imposed on it by railway and other companies, and by getting rid of the systems of middlemen or agents between the producer and consumer. It was founded just after the Civil War, reputedly by O. H. Kelley, of Boston, Mass., and was especially designed to redress the grievances of the farmers in the West. The popular name of its members is Grangers.

HUSO, *Acipenser huso*, the Beluga or isinglass sturgeon. It is sometimes 12 or 15 feet long, and weighs 1,200 pounds. One mentioned by Cuvier reached 3,000 pounds. It inhabits the great rivers falling into the Black and Caspian seas. The best isinglass is made from its air-bladder.

HUSS, JOHN (hös), a famous Bohemian protestant in religion; born of humble parents in Husinetz, near Prach-

atitz, Bohemia, July 6, 1369. He became a priest in 1400. Huss was a realist in philosophy, and adopted the views of WYCLIFFE (*q. v.*), whose works he translated and whose doctrines he preached, giving great offense to the Archbishop of Prague. Huss appeared by citation before the Council of Constance, and, though provided with a safe-conduct from the Emperor Siegmund, or Sigismund, he was adjudged a heretic, and burned alive July 6, 1415, as was his disciple Jerome of Prague, on May 30, 1416. By the decision of the Council of Constance, in 1414, the request of the Bohemian laity to communicate under two kinds was refused. The treatment of Huss exasperated his followers, and led to a religious war in which great ferocity and cruelty were manifested on both sides. The Hussite leaders were John Ziska, and after his death Procopius. Sigismund commanded the imperial forces. The Hussites fortified a mountain near Prague, which they called Mount Tabor. Before Ziska's death, Oct. 12, 1424, after obtaining religious liberty for Bohemia, the Hussites had begun to split into minor sects, as the Orebites, or Horebits, the Orphanites, and the Calixtines. In 1433, the Calixtines were conciliated by the concession of the cup of the laity. By the treaty of 1435, Siegmund was acknowledged King of Bohemia, which, however, remained in an uneasy state. The Hussite troubles prepared the way for the Lutheran Reformation.

HUSSAIN IBN ALI, King of the Hedjaz, and a lineal descendant of the Prophet. Before the outbreak of the European War, while Arabia, from which has arisen the new kingdom, was still a Turkish dependency. Hussain ibn Ali was Grand Sherif and Emir of Mecca. In June, 1916, he proclaimed himself in active alliance with the Allies, and declared the Hedjaz an independent kingdom. The Allies quickly recognized his claim, for his open participation in the war against Turkey made the proclamation of a jehad, or holy war, impossible. See HEDJAZ; TURKEY.

HUSSEIN KEMAL PASHA, Prince, Sultan of Egypt, under the British protectorate. Born about 1850, he was educated in Paris, being intimate with the family of Napoleon III. Leaving France in 1870, he held the positions of Inspector of Upper and Lower Egypt, Minister of Public Instruction, of Public Works, of the Interior, of War and Finance. His nephew, Abbas Hilmi, sided with Turkey in the European War and was deposed as Khedive by the British, who replaced him with Hussein Kemal, giving the latter the title of Sultan. He succeeded to the position in December, 1914.

HUSSITE, a follower of John Huss.

HUSTAB, one of the idols of the ancient Ninevites.

HUSTINGS. (1) A name given to a court formerly held in many cities of England, as York, Winchester, Lincoln, but especially applied to the county court of the City of London held before the lord mayor, recorder, and sheriffs. (2) The platform from which candidates for seats in Parliament addressed the constituency on their nomination, previous to the Ballot Act of 1872.

HUTCHESON, FRANCIS, a Scotch educator and philosopher; born in Drumalig, Ulster, Ireland, Aug. 8, 1694. For many years a public teacher in Glasgow, he became in 1729 Professor of Moral Philosophy at the university in that city. He is regarded as one of the founders of modern philosophy in Scotland. He was the author of: "Inquiry Into the Original of Our Ideas of Beauty and Virtue" (1720); "Nature and Conduct of the Passions and Affections" (1728); "System of Moral Philosophy" (1755). He died in Glasgow, Scotland, about 1746.

HUTCHINS, HARRY BURNS, an American educator; born in Lisbon, N. H., in 1847. He graduated University of Michigan in 1871. He was instructor and assistant professor of history and professor of law in University of Michigan from 1872 to 1887. From 1887 to 1894 he was professor of law in Cornell University, and from 1895 to 1909 was professor of law and dean of the Department of Law at the University of Michigan. He was acting president of that institution in 1897-1898, and again from 1909 to 1910. He was consulting editor of "American and English Encyclopedia of Law and Procedure," and wrote the biography of Thomas M. Cooley. He contributed much to legal and other periodicals.

HUTCHINSON, a city and county-seat of Reno co., Kan., on the Arkansas river, and on the Atchison, Topeka and Santa Fé, the Chicago, Rock Island and Pacific, the Hutchinson and Southern, and the Missouri Pacific railroads; 40 miles N. W. of Wichita. The city has one of the largest salt interests in the world. It is also an important meat packing and shipping center; and has manufactures of lumber, machinery, boilers, etc. There are a public library, high school, State reformatory, electric

lights, daily and weekly newspapers, and a National bank. Pop. (1910) 16,364; (1920) 23,298.

HUTCHINSON, ANNE, an American religious enthusiast; born in Lincolnshire, England, about 1590. Daughter of a Lincolnshire clergyman named Marbury; she married a Mr. Hutchinson, and in 1634 they emigrated to Boston, Mass. She held various theological heresies; among others, that the person of the Holy Ghost dwells in justified persons. She held meetings, lectured, and denounced the Massachusetts clergy. Her followers were charged with ANTINOMIANISM (*q. v.*). Being tried for heresy and sedition, she was banished from the colony. She and her friends removed to Rhode Island, where they acquired territory from the Narragansett Indians. After the death of her husband (who shared her opinions) she removed to a new settlement in New York State, where, in 1643, she and her whole family of 15 persons were taken prisoners by the Indians, and all but one daughter barbarously murdered.

HUTCHINSON, JOHN, an English revolutionist; born in Nottingham, England, in September, 1615. He was the son of Sir Thomas Hutchinson, and studied at Cambridge and Lincoln's Inn. He sided with the Parliament against the king. Becoming governor of Nottingham, he successfully held the town against enemies without and within. In 1646 he entered Parliament, and later sat as one of the commissions in the High Court of Justice for the king's trial, and signed the warrant for his execution. He sat in the first council of state, but became alarmed at the ambitious schemes of Cromwell, and ceased to take an active part in politics. At the Restoration, he was included in the Act of Amnesty, but later was imprisoned in the Tower and at Sandown Castle in Kent on suspicion of treasonable conspiracy, and died Sept. 11, 1664. The "Memoirs," written by his widow for her children, was first published in 1806.

HUTCHINSON, THOMAS, an American colonial governor; born in Boston, Mass., Sept. 9, 1711; was graduated at Harvard College in 1727, and early attained prominence in the colonial affairs of Massachusetts. In 1770 he was appointed governor, and became unpopular during the conflict with Great Britain over the right to tax the colonies. In 1774 he was superseded by General Gage. He died in Brompton, England, June 3, 1780.

HUTCHINSON, WOODS, an American physician and writer; born in Selby, England, in 1862. He graduated from Penn College in 1880 and studied medicine at the University of Michigan. He was professor of anatomy at the State University of Iowa from 1891 to 1896, and professor of comparative pathology at the University of Buffalo from 1896 to 1900. He served as lecturer and professor of several New York hospitals and was also lecturer at the London Medical Graduates' College. His published articles on medical subjects were widely read. They include "The Gospel According to Darwin" (1898); "Conquest of Consumption" (1910); "Exercise and Health" (1911); "Handbook of Health" (1911); "Civilization and Health" (1914); "Community Hygiene" (1915).

HUTTEN, BETTINA VON, an American novelist. She was born at Erie, Pa., in 1874, daughter of John Riddle, and in 1897 married Freiherr von Hutten in Florence, becoming divorced by mutual consent in 1909. She traveled a great deal and lived much at Steinbach. Her works included: "Marr'd in Making"; "Pam"; "What Became of Pam"; "Kingsmead"; "The Lordship of Love"; "Sharrow"; "Maria"; "Birds' Fountain"; "Magpie."

HUTTEN, ULRICH VON, a German controversial satirist; born in Steckelburg, near Fulda, Prussia, April 21, 1488. Of a noble family and destined for the Church, he preferred a life of roving adventure. He rose to fame by brilliant contributions to the current religious and political controversies. His works include: "The Art of Prosody"; "Nemo"; and "Dialogues." His most noteworthy production, however, is the "Letters of Obscure Men," mercilessly ridiculing the ignorance of the lower clergy. He died in the island of Ufnau, Lake Zurich, 1523.

HUTTON, CHARLES, an English mathematician; born in Newcastle-upon-Tyne, England, Aug. 14, 1737. He was the son of a superintendent of mines, and in 1755–1773 was a school teacher at Jesmond and Newcastle. In 1773 he was appointed to the professorship of mathematics at the Royal Military Academy, Woolwich, and in 1774 was elected a Fellow of the Royal Society. He was selected to perform the necessary calculations for determining the density of the earth, and his report was published in the "Philosophical Transactions" for 1778. He resigned the professorship in 1807. He wrote: "Tables of Products

and Powers of Numbers" (1781); "Mathematical Tables" (1785); "Mathematical and Philosophical Dictionary" (1795); "Course of Mathematics" (1798–1801); "Recreations in Mathematics and Natural Philosophy" (1803); etc. Besides these, he contributed mathematical papers to the "Philosophical Transactions." He died Jan. 27, 1823.

HUTTON, LAURENCE, an American editor; born in New York, Aug. 8, 1843. Devoting his earlier years to mercantile pursuits, he at length became dramatic critic of the New York "Evening Mail"; literary editor of "Harper's Magazine" (1886–1898). He wrote "Plays and Players"; "Edwin Booth"; "Literary Landmarks"; etc. He made a remarkable collection of death masks of noted people, which he presented to Princeton University. He died June 10, 1904.

HUTTON, MAURICE, a Canadian educator. He was born at Manchester, England, in 1856, and was educated at Oxford. He became lecturer on classics at Firth College, Sheffield, and in University College, Toronto, in 1880, professor of Greek in 1887, principal in 1901, and acting president in 1906–1907. From 1910 to 1919 he was vice-president of the Royal Society of Canada. His works include: "Hellenism"; and editions of Greek classics.

HUTTON, RICHARD HOLT, an English editor, critic, and author; born in 1826. He was editor of the London "Spectator," a literary critic of great repute, and the author of "Studies in Parliament: a Series of Sketches of Leading Politicians" (1866); "Essays, Theological and Literary" (2 vols., 1871); "Sir Walter Scott" (1878) in "English Men of Letters" series; "Essays on Some Modern Guides of English Thought in Matters of Faith" (1887). He died in 1897.

HUXLEY, LEONARD, a British author. He was born in 1860, and was educated at University College School, St. Andrew's University, and Balliol College, Oxford. He was assistant to Professor Lewis Campbell, professor of Greek at St. Andrew's, in 1883. Later he became assistant master, Charterhouse, Godalming, and reader to Smith, Elder & Co. His works include: "Life of Huxley"; "Life of Sir Joseph Hooker"; "Letters of a Betrothed"; "Thoughts on Education."

HUXLEY, THOMAS HENRY, an English biologist and essayist; born in Ealing, England, May 4, 1825. He was graduated at London University in 1845. In 1846–1850 he sailed around the world as a naval surgeon. In 1851 he was made a Fellow of the Royal Society; Professor of Natural History in the School of Mines in 1854; Hunterian Professor in the Royal College of Surgeons in 1863; president of the British Geological and Ethnological Societies in 1869; secretary of the Royal Society in 1872; Lord Rector of Aberdeen University in 1872; and president of the Royal Society in 1883. He was an able advocate of Darwinian evolution, and was perhaps best known to the popular apprehension by his agnostic speculations, in expounding which he came into controversy with the defenders of Theism and Christianity. He wrote: "Anatomy of Vertebrate Animals"; "Anatomy of Invertebrate Animals"; "Man's Place in Nature"; "Lay Sermons"; "Evolution and Ethics"; etc. He died in Eastbourne, England, June 29, 1895.

THOMAS H. HUXLEY

HUY (ü-ē′), a town of Belgium; on both banks of the Meuse, 19 miles S. W. of Liége. Its citadel (1822), whose works are partly excavated in the solid rock, commands the passage of the river. The Church of Notre Dame, a graceful Gothic edifice, was begun in 1311. In the vicinity are iron works and coal mines, and the manufactures include paper, leather, beer, spirits, etc. Peter the Hermit founded here the former abbey of Neufmoustier (*Novum Monasterium*), and here in 1115, he died. Huy has been frequently besieged. In the World War, when Belgium was invaded by the Germans, Huy was attacked and only yielded to superior numbers after heavy fighting. Pop. about 15,000.

HUYGENS, CHRISTIAN (hoi'gens), an eminent Dutch mathematician and astronomer; born in The Hague, April 14, 1629. He settled in Paris in 1663, at the invitation of Colbert, who bestowed on him a handsome pension, but returned to the Netherlands in 1681. In pure geometry, Huygens gave the reasons for the quadrature of the hyperbola, the ellipsis, and the circle; in mechanics, he laid down the theory of the pendulum, and its application to the clock; he discerned the synchronism of the cycloid, invented the theory of involutes and evolutes of curves, and explored the doctrine of centers of oscillation; most important of all, he announced the law of the motion of bodies revolving in circles, thereby "grazing" the law of gravitation. In astronomy, we owe him an improvement of the telescope and the memorable discovery of Saturn's ring. In optics he laid the foundation of the theory of undulations. He died in The Hague, June 8, 1695.

HUYSMANS, JORRIS KARL (üēs-mong'), a French novelist; born in Paris, France, Feb. 5, 1848. He studied law and entered the French civil service, but abandoned it for literature. At first a pronounced realist, he turned to idealism and even mysticism. He first attracted notice by the story "Pack on Back"; then followed "Martha," "The Vatard Sisters," "The Ménage," and others. The latest expression of his theories was in "Down There" (Là-Bas), and "On the Way" (1895). He died in 1907.

HVEN, or HWEN, a small island of Sweden, on the S. W. coast in the Sound, 15 miles N. E. of Copenhagen. It was the residence of Tycho Brahe, and the place where he built an observatory, which has since fallen into decay.

HYACINTH, in classical mythology, a Laconian youth, beloved by Apollo, who killed him undesignedly by a throw of a discus or quoit. The god transformed him into a flower (hyacinthus), on which, in memorial of his grief, he inscribed the Greek letters "alpha" and "iota." Scientifically viewed, the process should be reversed. The discovery of some plant with marks faintly resembling the Greek letters "alpha" and "iota" generated the myth of the youth Hyacinthus.

In botany, a genus of *Liliaceæ*, tribe *Scilleæ*, once so extensive as to include the common wild hyacinth (hyacinth of the woods) or blue-bell, then called *Hyacinthus nonscriptus*, next transferred to the genus *Agraphis* of Link, and called *Agraphis nutans*, and now figuring as *Scilla nutans*.

In mineralogy, a precious stone, described by Pliny as of the color of a hyacinth, and also like an amethyst, but not so blue. Some consider it a kind of amethyst.

HYACINTHE, PÈRE (yä-sant'), a French clergyman, the former monastic name of CHARLES LOYSON; born in Orleans, March 10, 1827. He studied at St. Sulpice, and in 1851 becoming priest, taught philosophy and theology at Avignon and Nantes. Subsequently entering the order of the Carmelites, he became known as a powerful preacher, and gathered crowded and enthusiastic audiences of all ranks of society to the Madeleine and Notre Dame in Paris. Almost as remarkable as his eloquence was the boldness with which he denounced existing abuses in the Church; and Archbishop Darboy defended him against the accusations of the Jesuits till in 1869 the general of his order imposed silence on him. Hyacinthe replied by a letter in which he called for a thorough reform of the Church, and was excommunicated. Relieved from monastic vows by the Pope, he became a secular priest under the name of the Abbé Loyson. He protested vigorously against the infallibility dogma. In 1872 he married an American lady. In 1873 he was chosen curé of a congregation of Liberal Catholics at Geneva. He published sermons and lectures, and in 1879 established a "Gallican" congregation in Paris, which in 1884 attached itself to the Old Catholic Church in Holland.

In 1900 he ministered to Old Catholics in Switzerland. His publications include: "Catholic Reform" (1892); "My Testament" (1893); "Christianity and Islamism" (1895). He died in 1912.

HYAENA, or HYENA, a genus of digitigrade carnivorous quadrupeds, included in the genus *Canis* by Linnæus, but now referred to the Æluroid division of the Carnivora, of which, however, it is a somewhat aberrant member, forming with *Proteles* a sub-family, *Hyænina*. Hyenas have six incisors and two canine teeth in each jaw, five molars on each side in the upper jaw, and four in the under. The body is covered with rather long coarse hair, forming a mane along the neck and back. The feet have each four toes. Beneath the anus is a deep glandular pouch, contributing much to the offensive odor by which hyenas are characterized. Hyenas eat carrion as well as newly killed prey, and are of much use as scavengers. They sometimes attack cattle, especially if they

flee, but rarely man, though they sometimes seize children. During the day they hide themselves, by night they roam singly or in packs in quest of prey. They prowl about towns and villages, and often dig up corpses that have not been very deeply buried.

Hyenas are found only in Africa and the S. of Asia, not extending to the farthest E. of the latter continent. The striped hyena (*H. striata*) is found both in Asia and Africa, and there are several varieties considerably different in size, color, etc. The smallest hyenas are of the size of a large dog. The spotted hyena (*H. crocuta*) inhabits South Africa. It is rather smaller than the largest varieties of the striped hyena, but is more fierce and dangerous. It is called tiger-wolf by the colonists of the Cape of Good Hope. Besides its ordinary howling, this hyena often indulges in an expression of gratification, resembling hysterical laughter, whence it has acquired the name of laughing hyena. The general color is ochry gray, with thinly scattered small round brown spots, and sooty muzzle and feet. The woolly hyena (*H. brunnea*) is a smaller South African species.

HYA-HYA, (hī″ä-hī″ä), a milky plant of South America.

HYAMSON, ALBERT MONTEFIORE, a British author. He was born in London in 1875 and was educated at Swansea Grammar School and Beaufort College, St. Leonard's. He entered postoffice in 1895, was editor of "Jewish Literary Annual" 1903–1906, became joint editor of "Zionist Review," and was prominent in Jewish affairs. His works include: "History of Jews in England"; "Jewish Surnames"; "Humor of the Postoffice"; "Elizabethan Adventures on the Spanish Main"; "Dictionary of Universal Biography"; "Rebirth of an Ancient People."

HYBRID, a mongrel produced, whether in plants or animals, by the impregnation of the female of one species, genus, or race, by the male belonging to a different family. The commonest sorts of hybrid are those which arise from the interconnection of different varieties of the same species; to notice which, the product of the wild boar and the domestic sow need only be mentioned. Hybrids are generally sterile, and the intermixture of different species, according to Owen, is guarded against by the aversion of two specifically different individuals to sexual union.

HYCSOS, HYKSHOS, (hik'sos), or Shepherd Kings, wandering tribes of Semitic descent, who conquered the whole of Egypt about 2100 B. C., and were driven out some 500 years afterward. The only detailed account of them in any ancient writer is a passage of a lost work of Manetho, cited by Josephus. Their epoch covers the 13th to the 17th dynasties.

HYDE, a city of England in Cheshire. It is on the river Tame. It has grown rapidly as a cotton manufacturing center. There are also manufactures of machinery and margarine. In the neighborhood are important coal mines. Pop. about 34,000.

HYDE, DOUGLAS, an Irish author. He was born in Roscommon and was educated at Trinity College, Dublin. Has been leading promoter of the revival of the Irish language and Irish customs and was president of the Gaelic League from its foundation till 1915. Has written many books both in Irish and English. President of the Irish Texts Society, Examiner in Irish to the Royal University. Received honorary freedom of Dublin, Cork, and Kilkenny in 1906 on returning from America with $55,000 for Gaelic League. His works include: "Love Songs of Connacht" (in Irish with English translation); "Literary History of Ireland"; "Mediæval Tales from the Irish."

HYDE, WILLIAM DEWITT, an American educator, born in Winchendon, Mass., in 1858. He graduated from Harvard University in 1879 and from the Andover Theological Seminary in 1882. He entered the Congregational ministry in 1883 and for two years following was pastor in Newark, N. J. In 1885 he was chosen president of Bowdoin College, where he held the chair of mental and moral philosophy. He wrote extensively on social and theological subjects. His writings include "Practical Ethics" (1892); "Practical Idealism," (1897); "The New Ethics" (1903); "The Five Great Philosophies of Life," (1911); "The Quest of the Best" (1913). He died in 1917.

HYDE PARK, an enclosure of about 400 acres, in London, extending from the W. extremity of the city to Kensington Gardens. It belonged to the Abbey of Westminster, and became the property of the crown on the dissolution of the monasteries, in the reign of Henry VIII. A canal or sheet of water, called the Serpentine, though in the form of a parallelogram, was made in Hyde Park, between 1730 and 1733, by order of Queen Caroline. At the E. end of it is an artificial waterfall, constructed in 1817.

Till the middle of the 17th century there was a part of it which contained deer.

HYDERABAD, preferably **HAIDARABAD** (hī-där-ä-bad′), a state of Hindustan, which comprehends the greater part of that central plateau of Southern India known as the Deccan, and is in possession of a Mohammedan prince, the Nizam; area, 80,000 square miles, exclusive of the Berar or Haidarabad Assigned Districts under British administration. The chief products are rice, wheat, maize, sugar-cane, tobacco, cotton, indigo, fruits, and timber. Pop. about 15,000,000. The ruler of Haidarabad belongs to a dynasty founded by Asaf Jah, a distinguished soldier, whom the Emperor Aurungzeb made viceroy of the Deccan in 1713, with the title of Nizam or Regulator. HAIDARABAD, the capital, is on the Musi river, at an elevation of 1,672 feet above the sea. It is surrounded by a stone wall flanked with bastions. Among the chief buildings are the extensive palace of the Nizam, the British residency, the Char Minar, or Four Minarets, built about 1590 as a Mohammedan college, the Jama Masjid, or cathedral mosque, designed after the one at Mecca. There are manufactures of silks, trinkets, and turbans. Pop. of city, with suburbs, about 550,000. Also a city, capital Sindh, B. I., pop. about 75,000.

HYDER ALI (hī-der-äl′ē), an Indian prince of Arabian origin, born in Mysore in 1718. He took the field with his brother, who was in alliance with France, 1751, and in the interval between that period and 1780 acquired for himself an independent sovereignty, and nearly brought the English presidency of Madras to ruin. His death occurred at a critical period in 1782, and he was succeeded by his son, Tippoo-Sahib, who was driven from the Carnatic in 1783.

HYDNORA (hid-nō′rä), a genus of parasitic plants belonging to the order *Cytinaceæ*, which consists entirely of root-parasites. *Hydnora africana* is a South African species parasitic on the roots of fleshy *euphorbiæ* and other succulent plants; it has a putrid smell, but is roasted and eaten by the natives, and is also used for tanning.

HYDRA, or **IDRA**, an island of the Grecian archipelago, on the E. coast of the Morea, between the gulfs of Nauplia and Ægina; area, 20 square miles. Pop. about 6,500.

HYDRA (hī′drä), in classical mythology, a monster which infested the Lake Lerna in Peloponnesus. It was the offspring of Ichidna's union with Typhon. It had 100 heads, and as soon as one was cut off, two grew up if the wound was not stopped by fire. It was one of the labors of Hercules to destroy this monster; this he effected with the assistance of Iolaus, who applied a red-hot iron to the wound as soon as one head was cut off. The conqueror dipped his arrows in the gall of the hydra, and all the wounds which he gave proved incurable.

In astronomy, the hydra or water-snake, one of the 15 ancient southern constellations. It is so long that it has been divided into four parts: (1) Hydra—*i. e.*, Hydra proper; (2) Hydra et Crater; (3) Hydra et Corvus; and (4) Hydræ continuatio. Hydra proper is a little S. of the bright star, Regulus, which is in Leo.

In zoölogy the typical genus of the family *Hydridæ*. The animal is locomotive, single, naked, gelatinous, sub-cylindrical, but very contractile and variable in form; the mouth surrounded by a single row of filiform tentacles. Propagation by the formation of gemmæ and ova upon or within the substance of the animal's body. If cut into pieces each will become a new hydra. If turned inside out the exterior surface will digest good and the interior one respire. Hydra was first described by Trembley in 1774. The genus contains the fresh water polypes. *Hydra viridis* has 6 to 10 tentacles, shorter than the body; it is leaf-green, and is found in ponds and still waters adhering to the roots of duckweed. *H. vulgaris* has 7 to 12 tentacles, at least as long as the body; it is orange, brown, yellow, or red. *H. attenuata* and *H. fusca* are rare.

HYDRANGEA (hī-drān′jēa), a genus of shrubs or herbs of the order *Saxifragaceæ*, containing about 33 species, natives of Asia and America. The garden hydrangea (*H. hortensis*) is a native of China, and was introduced into Great Britain by Banks in 1790. It is a favorite for the beauty and size of its flowers.

HYDRARTHRUS (hī-drar′thrus), a white swelling. The joints most subject to this disease are the knee, ankle, elbow, and wrist. It can be distinguished from rheumatic swelling of the joints by its fixed and wearing pain, which often exists for a long time before any enlargement of the part is perceptible.

HYDRATE. In chemistry, in combination with certain metallic oxides, water seems to play the part of an acid, forming a compound that may be con-

sidered as a pseudo-salt. Thus, with oxide of sodium water forms the compound $NaOH_2O$, or hydrate of soda, which is quite a different body to the simple NaO; in fact, such is the attraction existing between the two bodies that they cannot be separated by the strongest heat.

HYDRAULIC ENGINES, engines of which the motive power is water under pressure. In principle they do not differ essentially from steam engines. The water acts by difference of pressure—*i. e.*, it is admitted at a high pressure at the beginning of the stroke, and exhausted at a low pressure at the end of the stroke, thus giving a reciprocating motion to the plunger. They may also be rotary. As water is much more dense than steam, the induction and eduction pipes have to be larger and have no abrupt angles. The eduction valve is required to open promptly at the end of the stroke, and the induction valve must not close till the stroke is completed. In most of the hydraulic engines relief valves or other expedients are used to prevent these concussions. Since hydraulic engines work under much greater pressure they can be made much smaller than steam engines. A common form is the three-cylinder single acting engine; in each cylinder works a plunger; water is admitted by valves behind the plungers and forces them out; at the conclusion of the outstroke the pressure water-supply is cut off, and the exhaust valve opened, allowing the plunger to push the water out of the cylinder on the return stroke, and so on.

Hydraulic engines have been introduced in some special industries in large foundries, in the working of cranes and other heavy machinery, and also for draining of mines.

Hydraulic machines in a small form are used for many industrial purposes in the operating of printing presses, circular saws, lathes, etc. The water head is obtained from a reservoir or accumulator or, in cities where considerable pressure is constantly supplied, through the water mains.

HYDRAULIC LIFT, an apparatus on the principle of the hydraulic press, caused by means of a lever to draw up a chain which passes over sets of pulleys, and is thence conducted by leading pulleys over a jib. The weight is by this arrangement raised many times the stroke of the ram. See ELEVATOR.

HYDRAULIC MINING, a system of mining in which the force of a jet of water is used to sluice down a bed of auriferous gravel or earth, which is passed through sluices to detain the particles of gold.

HYDRAULIC RAM, a machine by which the fall of a column of water in a tube is caused to elevate a portion of itself to a height greater than that of its source.

HYDRAULICS, that part of mechanical science which has to do with conducting, raising, and confining water or supplying it as a motive power. It is sometimes called hydro-mechanics, and is subdivided into hydrostatics and hydrodynamics.

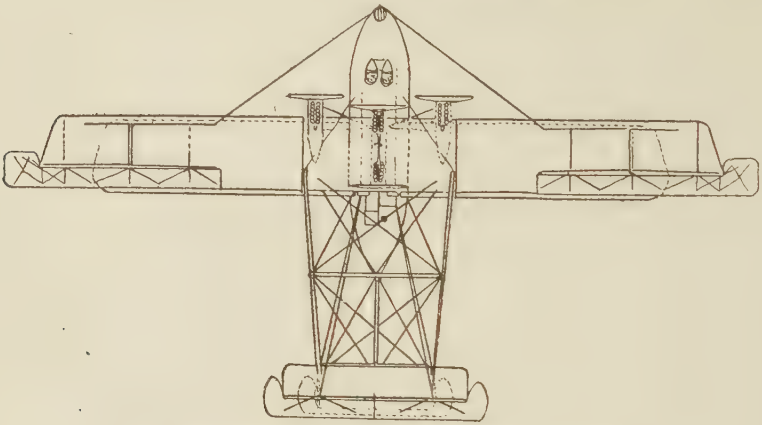
HYDRAZINES (hī′drä-zīns), in chemistry, $H_2N—NH_2$. Hydrazine is not known in a free state. Its derivatives are obtained by the reduction of nitrosoamines by zinc dust and acetic acid, $(CH_3)_2N:NO + 4H'$ (dimethyl-nitrosomine $= (CH_3)_2N — NH_2 + HOH$ (dimethylhydrazine); also formed by the action of nascent hydrogen on nitrosodiethyl urea and diethyl hydrazine urea.

HYDRIODIC ACID, in chemistry, hydric iodide, hydrogen iodide, HI. Hydriodic acid is a colorless gas forming in the air. At a pressure of four atmospheres at 0° it is condensed to a liquid. It can be frozen at ordinary temperature by a mixture of ether and solid Co_2 at a temperature of 55°.

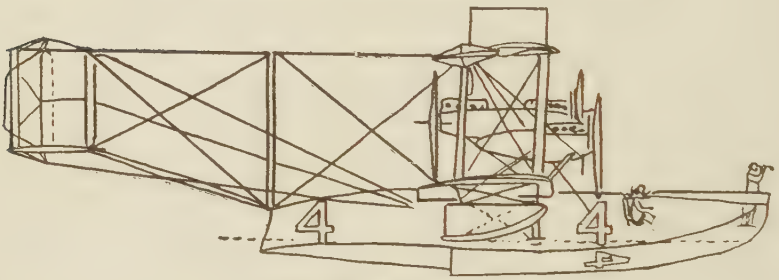
HYDRIODIC ETHER, or **IODIDE OF ETHYL**, a colorless uninflammable liquid composed of iodine and ethyl, of a sharp, pungent taste, and a penetrating ethereal odor; sp. gr. 1.94; boiling point 148° F.; sp. gr. of vapor 5.4. Formula C_2H_5I. At a red heat it is decomposed, giving off the purple vapors which are peculiar to iodine. Besides its use in the chemical laboratory as a reagent, it has attracted the attention of physicians, especially in the United States and England, as a remedial agent, to be administered by inhalation, in many cases in which the use of iodine is indicated. It is given in doses of 12 or 15 drops, inhaled from a napkin or sponge. In these doses, it is a gentle stimulant, and antispasmodic, but in larger quantities, and when inhaled for a considerable time, it becomes a powerful anæsthetic agent.

HYDROAEROPLANE, a type of airplane so constructed that it may start from and alight upon water. There are two types of hydroaeroplanes, those in which pontoons are used for the landing gear, and those which have a boatlike understructure. The hydroaeroplane is usually a large, heavily constructed plane, capable of carrying heavy loads,

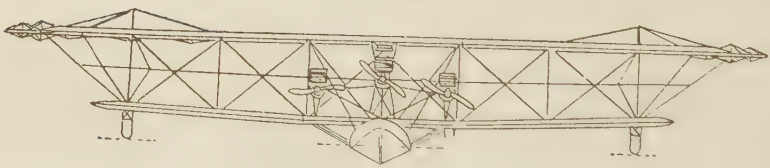
and making long flights, and even able to withstand a comparatively heavy sea when afloat upon the surface of the water. Planes of this type were used during the war for coast patrol work, submarine hunting, and for bombing flights, but as a battle plane they can usually be outmaneuvered by the faster and lighter land planes. Glenn Curtiss was one of the pioneers in the development of this type of air craft, and it was in a hydroaeroplane built by his company that the first successful transatlantic flight was made. These aeroplanes, the Navy Curtiss (NC boats), are of the most advanced construction and design. The N. C. boats are fitted with three Liberty motors developing about 1,200 horse power, and have a wing spread of 126 feet. The wings are 12 feet broad, and the space between the wings is 12 feet. The planes themselves weigh about 13,000 pounds, and have in trial flights carried as many as fifty men. See AERONAUTICS.



TOP ELEVATION OF THE HYDROAEROPLANE NC-4



A SIDE VIEW OF THE NC-4



A FRONT VIEW OF THE NC-4

HYDROBROMIC ACID, H Br, a colorless gas, occurring in solution as a colorless, odorless liquid, with a specific gravity of 1·077. Formed when hydrogen and bromine vapor are passed over warm platinum sponge, or when potassium bromide is distilled with phosphoric acid. Used in medicine as a sedative, and in the preparation of various organic compounds.

HYDROCARBON, a name given to compounds of one or more atoms of car-

bon, with atoms of hydrogen. Carbon is a tetrad element, capable of uniting with four atoms of H, as CH_4 methane. But carbon atoms can unite with each other, by one or more pair of bonds. Hydrocarbons having the C atoms united by only one pair of bonds are called paraffins, $Cn:H_2n+_2:$, as ethane. Hydrocarbons having two C atoms united by two pairs of bonds are called olefines Cn $H_2n:$, as ethene. By three pairs of bonds, are called acetylenes CnH_2n-_2 as acetylene. Besides these there are hydrocarbons belonging to the aromatic series, having the carbon atoms arranged to form a closed ring, as BENZENE, C_6H_6 (*q. v.*), and the naphthalene series containing two closed rings. The constitution of the other groups of hydrocarbons is described under their respective names.

HYDROCEPHALUS, a form of dropsy in the ventricles of the brain, or in the arachnoid cavity, in children, and usually rapidly fatal, though cases have been known to go on to adult life.

HYDROCHLORIC ACID, (HCl), a gaseous compound of equal volumes of hydrogen and chlorine. It is evolved during volcanic eruptions, and is found in the water which collects in the crevices of mountains, as well as in rivers which take their rise in volcanic formations, especially in South America. It may be produced by decomposing common salt with sulphuric acid ($2Na\ Cl + H_2SO_4 = 2H{\cdot}Cl + Na_2SO_4$), or by bringing equal volumes of chlorine and hydrogen together and exposing the mixture to diffused daylight with condensation, as it explodes in direct sunlight.

HYDROCYANIC ACID, cyanide of hydrogen, hydric cyanide, hydrogen cyanide, prussic acid. Discovered by Scheele in 1782.

HYDRODYNAMICS, a department of science which treats of the nature of liquids in motion, as opposed to hydrostatics, which investigates the condition of their equilibrium when at rest.

HYDRO-ELECTRIC MACHINE, a mechanism in which electricity is generated by the friction of steam against the sides of orifices through which it is allowed to escape under high pressure.

HYDROFLUORIC ACID, hydrogen fluoride, fluoride of hydrogen, hydric fluoride, HF. The anhydrous acid is obtained by neutralizing in a platinum dish the aqueous solution of hydrofluoric acid with caustic potash, and evaporating the solution.

HYDROGEN, a monatomic metallic element, which exists in the state of gas. Symbol H; at. wt., 1; density, 0.06927; air being 1; weight of a liter of hydrogen, 0.0896 grammes, called a crith. Hydrogen can be obtained by the electrolysis of water, H_2O, the H being liberated at the platinum pole; by the action of metallic sodium and water; also by passing steam over iron filings, $3Fe + 4HOH = Fe_3O_4 + 8H'$; by boiling zinc with caustic potash, $2KHO + Zn = K_2\ ZnO_2 + 2H'$; but H is generally made by the action of dilute H_2SO_4 on zinc. Hydrogen can be purified by passing it through a solution of two parts of $K_2Cr_2O_7$ in 20 parts of water and one part of H_2SO_4, then washing it with KHO, and drying it by passing it through concentrated H_2SO_4.

HYDROGEN DIOXIDE, hydrogen peroxide, H_2O_2, or HO — OH. Obtained by the action of dilute sulphuric acid and barium peroxide, BaO_2.

HYDROGEN PEROXIDE (H_2O_2), a compound of hydrogen and oxygen, containing a larger proportion of oxygen than water, the other compound of these elements.

HYDROGEN SULPHIDE, H_2S, sulphide of hydrogen, hydric sulphide, sulphydric acid, hydrosulphuric acid, sulphuretted hydrogen. A gas obtained by passing hydrogen through sulphur, or by burning sulphur vapor in hydrogen.

HYDROGRAPHY (hī-drog-rä-fē), a branch of science which deals with the measurement and description of the seas, lakes, rivers, and other waters, as used for purposes of commerce or navigation; the art of marine surveying and of the construction of charts.

HYDROMECHANICS, a term sometimes used to include hydrodynamics and hydrostatics, as also hydraulics, or the department of engineering which deals with the application of liquids in motion to machinery. Hydromechanics is sometimes limited to the latter department alone. On the other hand, hydraulics is sometimes made to cover hydrodynamics.

HYDROIDA (hī-drō'ē-dä), in zoology, a typical sub-class of *Hydrozoa*. They have an alimentary region or polypite provided with an adherent disk or hydrorhiza and prehensile tentacles. Unlike hydra, the type of the sub-class, most of the hydroida live in societies, each of which constitutes a polypidom so like a seaweed that it is often collected as such. But while the apertures on an ordinary seaweed are only minute pores, the *Hydroida* have little cup-like

cells along the stem and at the extremities of the branches, in which the individual polyp lives. The cells have a small hole at the bottom, and the stock is hollow, so as to enable the individual polyps to remain part of a compound organism. The sub-class is divided into five orders, *Hydrida, Corynida, Sertularida, Campanularida,* and *Thecomedusæ.* The *Polyzoa* or *Bryozoa,* once ranked with the sub-class, now figure as a distinct class, arranged under the sub-kingdom *Molluscoida.* See HYDROZOON.

HYDROMETER (hī-drom′ē-ter), an instrument for determining the relative densities of liquids. Distilled water is usually referred to as the standard of comparison. It consists essentially of a bulb or float weighted at bottom so as to float upright, and having an elongated stem, graduated to indicate the density of the liquid by the depth to which it sinks.

HYDROKINETICS, that branch of hydrodynamics which treats of the application of forces producing motion in fluids, having thus to do with the flow of liquids in pipes, its issue from orifices under certain pressures, etc.

HYDROMANCY, a form of divination practiced by the ancients; it consisted in interpreting symbolically the colors and images seen in water.

HYDROPATHY (hī-drop′a-thē). See HYDROTHERAPY.

HYDROPHOBIA, rabies, from bite of mad dog, more rarely cat, wolf, or fox; a contagious disease, the result of a specific poison. The great danger lies in the fact that a person bitten by a supposed mad dog imagines or simulates its symptoms, especially if nervous or hysterical; whereas only a few of those bitten by a mad dog take the disease. The average period of incubation is 40 days, but it varies from 15 days to two years. Immediate cauterization or excision of the part is the only effective remedy. The Pasteur method of inoculation is as follows: A rabbit is inoculated with a fragment of the spinal cord of a mad dog. The animal is affected with hydrophobia in the space of about one fortnight. A portion of its spinal cord is employed to inoculate a second rabbit, which also contracts the disease, but more rapidly; the spinal cord of this second rabbit serves to inoculate a third, and so on. When the spinal cord of these animals, which have died of hydrophobia, is suspended in a perfectly dry tube its virulence diminishes by degrees and at last disappears. A collection of these spinal cords, some of them entirely stale and powerless, others more fresh and active, others, again, quite fresh and extremely active, are always kept in readiness. To render a dog insusceptible to rabies he is first inoculated with the stale and powerless specimens, then with fresher and more active ones, and lastly with the most powerful of all, when he becomes quite proof against the inoculation of rabies. Pasteur claimed that by the same process he could produce in the human being a corresponding immunity against hydrophobia. The difficulties that surround the subject will be appreciated when it is remembered that (1) 60 per cent. of people bitten by mad dogs do not develop hydrophobia; (2) the incubation of the disease is sometimes extremely long, cases having been known to be deferred till two years after the bite.

HYDROPHYLLACEÆ (hī-drō-fil-as′ē-ī), a natural order of herbs and bushes containing about 80 known species, natives chiefly of the colder parts of America. None of them are of importance; but some of them are favorite ornaments of flower-borders, particularly different species of *nemophila.*

HYDROSCOPE, an instrument for measuring the dampness or moisture of the air or of any other gas.

HYDROSTATIC PRESS, a machine in which the pressure applied to a small piston is by means of water transmitted to a larger one; great pressure is thus produced, the increase being in the proportion of the excess of the sectional area of the one piston over the other. In application the different parts of a hydrostatic press occupy every possible position with regard to each other, and in many the force pump is worked by hand. Great force, with slow motion, is communicated to a piston by means of water forced into the large cylinder in which it moves, by a forcing pump of small diameter, to which the power is applied, the principle involved being the same as in the hydrostatic bellows.

HYDROSTATICS, a department of science which treats of the conditions of equilibrium in liquids. For a liquid to remain at rest in any vessel, first, its surface must be everywhere at right angles to the forces which act on the molecules of the liquid, and, second, every molecule of the mass of the liquid must be subject in every direction to equal and contrary pressure. If the same liquid be placed in several vessels freely communicating with each other, it will stand in them all at the same horizon-

tal level. If two or more liquids be placed in the same vessel they will arrange themselves according to their relative densities, after which the equilibrium will be stable. According to Hallam, the real creators of the science were Castellio (1577–1644), and Torricelli (1608–1647).

HYDROSULPHURIC ACID, or sulphuretted hydrogen or hydrothionic acid (H_2S), is a colorless inflammable gas produced by the putrefaction of sulphurous organic matters. Many mineral waters contain it naturally. It may be artificially produced by burning sulphur vapor in hydrogen, or by passing hydrogen through sulphur. It has a sweet taste but a very nauseous odor as of rotten eggs. It has poisonous effects when breathed, and experiments have shown that birds perished in air which contained $\frac{1}{1500}$th part of the gas.

HYDROTHERAPY, the scientific use of water in the treatment of human disorders and ailments. This is one of the oldest known curative methods, for it is known that Hippocrates used it in the treatment of many kinds of disease, and it is also a matter of record that the Emperor Augustus had a personal hydropathic physician. There were many practitioners of hydrotherapy during the Middle Ages, and in 1723, Niccolo Lanzani, a physician of Naples, issued a treatise on some phases of the subject, as did Dr. Bayard and Sir John Floyer in England at about the same time, and in 1797 Dr. Currie published "The Medical Report of the Effects of Water" in which the use of cold water for fevers was advocated. About 1820, Vincent Priessnitz, not a doctor but a Silesian farmer, insisted that water was a cure for a great many ailments because of its beneficial effects upon him, and he began to practice his ideas upon his neighbors with remarkable results. It was he who introduced many of the methods of using water, such as the sheet bath, the compress, and the douche. He insisted that his patients drink large quantities of water, take vigorous outdoor exercise, pay strict attention to their diet, and have long periods of complete relaxation, thus combining all the resources of hygiene for his new system of treatment, which was so successful that in twenty years of treatment he had only about 40 deaths out of nearly seven thousand patients. In 1883 Dr. Winternitz, a German, established the scientific principle that water may be used internally for its own properties, and either internally or externally as a mechanical carrier of heat or cold, and may be used in any of its three physical forms—ice (solid), liquid, or steam (gas). While the most modern practice does not consider water a cure-all, there are few physicians who do not use hydrotherapy in some form, such as ablution, affusion, the drip sheet, wet pack, compress, tub bath or douche.

HYDROTHORAX, a name given to serous fluid occupying the pleura. It may take place as the result of inflammation, also in heart disease, in disease of the kidneys, and sometimes in anæmia.

HYÈRES (ē-ār') a small town of France, 3 miles from the Mediterranean. It is celebrated for the beauty of the situation and the mildness of the climate, and is therefore much resorted to by foreigners suffering from consumption or nervous complaints.

HYGIENE, the study of the prevention of disease, the art of preserving health, through wise sanitary precautions, such as attention to diet, regimen, etc.

HYGROMETER (hī-grom'ēter), an instrument for measuring the comparative moisture of the air. There are three kinds: (1) those which act by absorption; (2) by condensation, and (3) those in which the hygrometric condition is deduced from observations of a wet and dry bulb. Of the first class is the hygrometer of Saussure (died 1799). It consists of a human hair boiled in lye, and acts by absorption and evaporation, lengthening or contracting as the air is more or less moist.

HYLÆOSAURUS (hī-lē-ō-sou'ros), a gigantic fossil lizard discovered in the Wealden formation of Tilgate Forest. Its probable length was about 25 feet. It is one of the *Ornithoscelida*, the group which presents a structure intermediate between that of existing birds and reptiles.

HYMANS, PAUL, a Belgian statesman. He was born in Brussels in 1865 and was educated at Brussels University. Since 1900 has been member of the House of Representatives for Brussels, and of the Brussels Municipal Council since 1911; professor for some years at Brussels University and vice-president of the University's Board. In 1915 he became Belgian envoy extraordinary and minister plenipotentiary to the Court of St. James, and in 1917 Minister for Foreign Affaires in the Belgian Government. His works include: "Histoire parlementaire de la Belgique"; "Brussels Moderne"; "Frère Orban"; "Portraits, Essais et Discours."

HYMEN, the Greek god of marriage, was son of Bacchus and Venus, or, according to another version, of Apollo and one of the Muses. The people of Athens instituted festivals in his honor, and solemnly invoked him at their nuptials, as the Latins did their Thalassius. Hymen was represented as crowned with flowers, holding a burning torch in one hand, and in the other a wreath. In anatomy, the name denotes the semilunar, parabolic, or circular membrane situated at the outer orifice of the vagina in virgins.

PAUL HYMANS

HYMENOPTERA (hī-men-op'ter-a), an order of insects, containing about 25,000 species, and now usually acknowledged to stand at the head of the class of insects, and of which many, as ants and bees, are singularly interesting and important.

HYMETTUS, a mountain in Attica, Greece; now called Trelo Vouni, to the S. E. of Athens; was famous among the ancients for its honey and its bluish marble. The honey is still in repute.

HYMN, a sacred composition in poetry intended to be sung with or without the aid of a musical instrument, and not being versified from the book of Psalms, else it is called a Psalm, or directly from any other part of Scripture, or else it is a paraphrase. Hilary, Bishop of Arles, is said to have composed the first hymn for Christian worship about A. D. 431, but as early as the time of Pliny the Younger the Christians are said to have habitually sung one to Christ as God. On Dec. 9, 633, the Council of Toledo sanctioned the use of hymns in churches. Luther did much to popularize hymnody in the infant Protestant Church in Germany. Of the hymns now in use many were composed by Isaac Watts, Charles Wesley, John Wesley, Cowper, John Newton, James Montgomery, John Henry Newman, Frederick William Faber, and Frances Ridley Havergal. Prominent among Americans who have written hymns are Oliver Wendell Holmes, Phœbe Cary, P. P. Bliss, Ira D. Sankey, Julia Ward Howe, who wrote "The Battle Hymn of the Republic," Samuel Francis Smith, author of the national hymn "America," Timothy Dwight, Ray Palmer, who wrote "My Faith Looks up to Thee," Joseph Henry Gilmore, etc.

HYMNOLOGY (-nol'ō-ji), a collection of hymns; hymns collectively; the hymns used by any particular Church or body.

HYNDMAN, HENRY MAYERS, an English socialist author; born in 1842. One of the founders of the Social Democratic Federation in 1881. Among his works which deal chiefly with socialism are: "The Indian Famine and the Crisis in India"; "Text-Book of Democracy"; "The Historical Basis of Socialism in England." He was co-author with William Morris of "A Summary of the Principles of Socialism"; "Economics of Socialism" (1896), and wrote "Future of Democracy" (1915). He also published his volumes of autobiography, "Records of an Adventurous Life" (1911) and "Further Records" (1912).

HYOID BONE, or **HYOID ARCH**, in anatomy, the second arch developed from the cranium, giving support to the tongue and attachment to numerous muscles of the neck.

HYPATIA (hī-pā'shē-ä), an Alexandrian teacher and heroine; born in Alexandria between 370–380. She was the daughter of Theon, an eminent mathematician of Alexandria, whom she succeeded in the government of that school. Orestes, the governor of Alexandria, had a high respect for Hypatia, and frequently consulted her on matters of importance. Between the governor and the patriarch Cyril there was bitter enmity, which broke out into open war, and the monks siding with their chief,

assembled in a riotous manner against Orestes, who was obliged to fly from the city. They then seized Hypatia, and having torn her in pieces, burnt her mangled limbs to ashes, 415 A. D.

HYPERÆMIA (hī-per-ē'-mē-ä), a plethora or fullness of blood. The whole mass of the blood is increased to a variable extent. The face is full and turgid, with a purplish tinge. There is a tendency to lassitude and sleep. Called also polyæmia.

HYPERÆSTHESIA (hī-per-es-thē'-zē-ä), an excessive excitability of the parts of the nervous apparatus which have to do with sensation, special or common. Abnormal sensibility to pain is, however, more correctly called "hyperalgesia." In this condition, as in ticdouloureux, the slightest stimulus may cause a paroxysm of pain, even a current of air or a noise bringing on an attack; while in hyperæsthesia of the special senses bright flashes of light may be seen, sounds may be heard, and even smells and tastes experienced in the absence of any objective cause.

HYPERBOLA (hī-per'bō-lä), in mathematics, one of the three conic sections. It is a plane curve of such a form that if from any point in it two straight lines be drawn to two given fixed points, the excess of the straight line drawn to one of the points above the other will always be equal. The two points are called the foci. Other terms used of the hyperbola are abscissæ, parameter, *latus rectum*, directrix, and a term peculiar to it, asymptotes.

HYPERICACEÆ, or **HYPERICINÆ** (hī-per-ē-kas'-ē-ï), a natural order of about 300 known species, trees, shrubs, and herbaceous plants, widely distributed over the world, and in very different climates, but particularly numerous in North America. The species of *Vismia* yield a substance resembling gamboge. Many of the *hypericaceæ* belong to the genus *Hypericum*, or St. John's Wort.

HYPERION, in astronomy, the name given to the 7th satellite of Saturn, discovered in 1848, at the Harvard Observatory by G. P. Bond. It is just outside the satellite Titan, and the considerable mass of the latter causes perturbations in the orbit of Hyperion, which have proved to be a difficult problem in celestial mechanics, and a unique case in the solar system.

HYPERMETROPIA (hi-per-met-rope-a), far-sightedness; it is the opposite of myopia, or near-sightedness, and differs from presbyopia in being congenital.

HYPERSTHENITE, a more or less coarsely crystalline igneous neck allied to gabbro. It is an aggregate of labradorite (felspar) and hypersthene, and is of plutonic origin.

HYPNOTISM, that which formerly was, that which, popularly, still is called "mesmerism," or, more exactly "animal magnetism," founded on a belief in a so-called "magnetic fluid" which is supposed to pass from operator to subject, has become recognized as hypnotism. The actual foundation of modern hypnotic suggestion was discovered by Liebeault of Nancy. After several years of practical experience in 1866, he wrote his first book on the subject. It was shelved and he was pronounced erratic. Hypnotism remained a curiosity and Liebeault's book was not reproduced till six years after Charcot, in 1878, began his studies in Hypnotism. In 1884 Bernheim wrote his charming book on suggestion and this created a demand for Liebeault's book, which then gave him his lasting reputation. He was Bernheim's teacher. The word hypnotism means putting a person to sleep and means nothing else. If an individual seems to be subjected to another in the waking state it should be said that he is unduly influenced. He is not hypnotized. That would mean that he was asleep.

The means by which hypnotism is used is "suggestion." A person may be influenced by suggestion in the waking state, for suggestion is a great force in daily life. As connected with hypnotism, however, suggestion is the expression of an idea or combination of ideas which becomes impressed upon the mind of the somnolent subject to whom it is addressed. Conscious or unconscious results are sure to follow.

If a subject be awake he can, according to the strength of his will and desire, control to a greater or lesser degree the effect of a suggestion which he has received.

In the hypnotic state this self-control is decreased in a degree corresponding to that of the increase of the degree of sleep. Nevertheless, if merely the first degree of hypnosis have been attained, the subject, conscious of all he hears, may be influenced by the suggestion of the operator. In this way a vast amount of relief has been given to individuals who may claim that they have not been affected at all. In the hypnotic state there are nine sharply marked degrees of somnolence. In the first six degrees not-

withstanding he has been perfectly quiet and apparently asleep, the patient remembers all that has been said. In the last three degrees the patient, on waking, remembers nothing. Strange as it may seem, however, a person may be more influenced by suggestion in the lighter degrees of sleep than in the more profound degrees, and vice versa. This is due to the patient's suggestibility. Generally, if the subject be made to reach any degree of somnolency he can be relieved by suggestion. No person can be hypnotized unless he be willing. No person can be hypnotized at a distance, unless by telephone, or if he be a good and willing subject, by letter; and the patient must first have been hypnotized by the writer at some previous time. Otherwise the operator cannot influence him at a distance in the slightest degree.

It is an absolutely safe and beneficent form of aid. It may not always bring relief, but never in the hands of a competent operator has it done harm.

The method of the operators of the school of Nancy is wholly verbal. The patient is talked to sleep and on waking he is delighted by the changes in himself which are apparent and he has become convinced of the agreeable effects of the treatment.

Formerly a bright object was held between and above the patient's eyes, and he was directed to fix his eyes upon it. This created sleep. But it was found that nervous distress was apt to follow this method, and it has been abandoned by followers of the school of Nancy. If a sleeping person be assured by the operator that he will lose his craving for alcohol, or opium, or cocaine, or, that his pain will cease, that he will sleep at night, that his nervous unrest will disappear, that his power of will or a mental concentration will increase, and so forth, in nine out of ten cases the desired result will follow.

There are scores of popular forms of relief which act wholly through the patient's mind and in themselves literally have no value. The effect of the mind cure and Christian Science is due to a weak form of suggestion, behind which an intelligent knowledge of anatomy, physiology, and disease is wholly lacking. The results are owing to influences produced upon the minds of those who seek these forms of relief, which thus have accomplished a degree of benefit but are dangerous aids where serious disease exists.

With reference to causation of crime by means of hypnotic suggestion: few or no scientific men believe it possible. Habit is as strong as death. If a man's habit of mind be honest, no suggestion, sleeping or waking, can cause him to commit crime of any sort. If he be dishonest, naturally or by inclination, the suggestion would be unnecessary.

The hypnotic sleep is a natural sleep. Those who claim that it is not natural are not intelligent in the matter and their opinions are based upon pure and uninformed theory.

As has been shown by scores of thousands of cases, treated by brilliant and educated physicians, the treatment is absolutely innocuous. It either relieves or produces a neutral effect, and is useful in a multitude of ailments which baffle ordinary means of relief.

But the operator must be educated in the use of this valuable method of treatment. Hypnotism should be used only by physicians, and amateurs should by no means experiment with it as a means of amusement.

HYPNUM, a genus of mosses belonging to the order *Bryineæ*. Archegonia and capsules are borne on special lateral branches. The sexual organs are formed in August and September, and the capsules take from 10 months to a year to ripen.

HYPOCHÆRIS (hip-ō-kē′-ris), a genus of plants of the natural order *Compositæ*, sub-order *Cichoraceæ*, of which one species, *H. radicata*, or long rooted cat's ear, is extremely common in meadows and pastures in Great Britain. Its leaves and flowers resemble the dandelion.

HYPOCHLOROUS ACID, HClO, the acid contained in bleaching powder. It can only be obtained as a dilute solution, as in the concentrated state it is very liable to decomposition.

HYPODERMIC INJECTION, a forcing of some substance beneath the skin; a method adopted in medicine when the condition of the stomach or other organs renders the use of drugs by the mouth objectionable, or when rapidity of action is desired.

HYPOGÆIC ACID (hip-ō-gā′ik), $C_{16}H_{30}O_2$. A monatomic fatty acid contained as a glyceride, together with palmitin and arachin, in the oil of the earthnut *Arachis hypogæa*. Hypogæic acid crystallizes from ether in needles which melt at 33°.

HYPOPHOSPHITES, salts of hypophosphorous acid, especially certain medicinal salts, chiefly the hypophosphites of potassium, sodium, and calcium. They have been used with considerable advantage in disorders of the blood and the di-

gestive organs, and have also been found of benefit in consumption.

HYPOPHOSPHOROUS ACID, H_3PO_2, hydric hypophosphite. It can be obtained as a barium salt. By boiling phosphorus with barium hydrate, phosphuretted hydrogen escapes as a gas.

HYPOPHYSIS (-pof'i-sis), a disease of the eyelids, when hairs grow so much as to irritate and offend the pupil.

HYPOSTASIS, in alchemy, the principle or element of anything; specifically, mercury, sulphur, and salt, which the alchemists deemed the principles or elements of all material bodies. In botany, the name given by Dutrochet to what is more commonly called the suspensor or suspensory cord of the embryo of an ovule.

HYPOSULPHITES, salts of hyposulphurous acid. Among the most important are the hyposulphites of sodium and calcium, the former of which is used in medicine as an external remedy in parasitic skin disorders and an internal one in checking fermentation in zymotic diseases. It is variously used in bleaching, photography, and other arts as an antichlore, a dissolvent of bromide and iodide of silver, etc.

HYPOTHECATION, in civil law, an engagement by which the debtor assigns his goods in pledge to a creditor as a security for his debt, without parting with the immediate possession; differing, in the last particular, from the simple pledge. In commerce, the pawning of a ship for necessaries, or to raise money in some critical emergency.

HYPOTHENUSE, or **HYPOTENUSE**, the name given to that side of a right-angled triangle which subtends, or is opposite to, the right angle. Its property—that the square described on it is equal to the sum of the squares described on the other two sides—is demonstrated and generalized, so as to apply to any figure in Euclid. The discovery of this property is attributed to Pythagoras.

HYPOTHESIS, etymologically a supposition, is popularly used to denote something not proved, but assumed for the sake of argument. In scientific and philosophical usage it denotes either a probable theory of phenomena not yet fully explained, or a strictly scientific theory which accounts for all the known facts of the case, and which only needs the verification of subsequent observations and deductions to become a certainty.

HYPSOMETRY, that department of geodesy which treats of the measurements of the altitudes or relative heights of various points on the earth's surface. In all cases in which great accuracy is essential, trigonometrical methods must be employed, but in other cases sufficiently accurate results may be obtained by levelling, by the use of the barometer, or by the boiling point of water as given by the thermometer. The trigonometrical method is often the only one available, as the height to be measured may be quite inaccessible. The barometric method is based on the fact that as the mercurial column is supported by the atmospheric pressure, it must fall when conveyed from a lower to a higher level, as in the latter case the pressure is diminished. Were the atmosphere uniform in density throughout, nothing could be simpler than the measurement of heights by the barometer, but gases being very compressible, the lower strata of the atmosphere are denser than the upper strata, being exposed to greater pressure. Moreover, increase of temperature affects the density of the mercury in the barometer, and also that of the air, and further complicates the problem. Hence for the greatest accuracy in determining the difference of levels two mercurial barometers and four thermometers are required. Two of the thermometers are used for determining the temperature of the air at the stations, and two are attached to the barometers for determining the temperature of the mercury. The observations are made simultaneously. The aneroid barometer is in some respects more suitable than the mercurial, being much more portable, and requiring two thermometers only. After the necessary observations are made the required height may be calculated by the use of certain logarithmic formulæ.

HYRAX, a genus of pachydermatous mammalia, intermediate in their character between the rhinoceros and the tapir. It is the only genus of the order *Hyracoidea*, characterized by having no canine teeth, but long curved incisors. The front feet have four toes, and the hind feet three. The Cape hyrax is by the colonists of South Africa called rock badger and rock rabbit, from the fact that they inhabit rocky places. They are also called damans.

HYRCANIA, an ancient district of Asia, of indefinite extent, bordered on the Caspian Sea (sometimes called Hyrcanum Mare) and the river Oxus. It corresponded with the modern Mazanderán and Asterabad.

HYRCANUS, JOHANNES, a high priest and prince of the Jews. He was son of Simon Maccabæus, on whose assassination he succeeded him as supreme ruler, 135 B. C. Jerusalem was soon after besieged by Antiochus Sidetes, King of Syria, with whom Hyrcanus was compelled to make a burdensome peace. In 131 he accompanied Antiochus in his expedition against the Parthians, and from a victory over the Hyrcanian tribe he acquired the surname Hyrcanus. He then threw off the yoke of Syria, conquered Idumea, besieged and destroyed Samaria, and made an alliance with Rome. He died 106 B. C.

HYRCANUS II., eldest son of Alexander Jannæus; became sovereign pontiff 79 B. C., was dethroned by his brother Aristobulus, and restored by the Romans as a tributary prince in 63. He was beheaded by Herod, 29 B. C.

HYRIA (hir'rē-ä), an Arcadian nymph, who so much bewailed the death of her father, who had thrown himself headlong from the top of a rock, that she dissolved away in tears, and was changed into a lake bearing her name.

HYSSOP, a genus of plants of the natural order *Labiatæ,* distinguished by four straight diverging stamens and a calyx with 15 ribs. The known species are few. The common hyssop (*H. officinalis*) is a native of the S. of Europe and the East. It is found on the Alps of Austria. It is a half shrubby plant. The flowers generally of a very beautiful blue. It has an agreeable aromatic odor. It has long been in cultivation for the sake of its leaves and young shoots, sometimes used for culinary purposes as a seasoning, but more generally in a dried state as a stomachic and carminative. A syrup made with them is a popular remedy for colds.

HYSTERESIS (his-ter-ē'sis), an indisposition to change from a condition previously induced, a phenomenon of magnetization of iron. It may be attributed to a sort of internal or molecular friction, causing energy to be absorbed when iron is magnetized.

HYSTERIA (his-ter'ē-ä), a nervous disorder of females, usually most frequent at the catamenial period and in the unmarried. Indolent and luxurious habits, over-spoiling, disappointed affection, grief, etc., are among the chief causes.

HYSTERO-EPILEPSY, a nervous disease of women, occurring during the fertile period of life, first observed and described by Charcot. The disease is of a paroxysmal nature, and its symptoms may be divided into inter-paroxysmal and paroxysmal. The former consist of extreme sensitiveness over the region of one or both ovaries, and loss of tactile sensibility and complete insensibility to pain in one lateral half of the body, the side on which ovarian tenderness exists. Sight is sometimes implicated, manifested by a peculiar form of color blindness. All these impairments of sensation may be shifted to the other side of the body on the application of magnets and plates of metals, the originally affected side regaining sensibility so long as the opposite one is insensible. The mental faculties are generally weakened and the disease is for the most part incurable.

HYTHE, one of the Cinque Ports of England. In 1295 the French made a descent on Hythe, but were decisively repulsed.

I

I, i, the ninth letter and the third vowel in the English alphabet. It has two principal sounds: (1) a long sound, as in bind, find, and in all words of one syllable ending in e, as in fine, wine, etc.; (2) a short sound, as in fin, bill, fill, etc. Besides these it has also three minor sounds: (1) as in dirk, first, etc.; (2) the French sound, as in intrigue, machine, etc.; and (3) the consonantal sound of y, when followed by a vowel, as in Christian, million, etc. With a and e, i makes several digraphs, as in wail, neigh, field, seize, friend; with o it forms a proper diphthong, as in oil. A, i, and u are by philologists called the primitive vowels, and from them all the various vowel sounds in the Aryan language have been developed. As a prefix, i was used in Middle English to represent the A. S. *ge* as in *iwis* = *gewiss*.

IACCHUS (yak'us), the Eleusinian name of Bacchus.

IALYSUS (yal'ē-sus), a city of Rhodes, founded by the Phœnicians. Its history goes back to about 1300 B. C. and it is alluded to by Pindar.

IAMBIC (ē-am'bik or ī-am'bik), in prosody a foot consisting of one short and one long syllable, or one unaccented and one accented. The iambic meter having been originally, according to Aristotle, employed in satirical poems, the term "iambics" came to be used as equivalent to a satire or lampoon.

IANTHE (ī-an'thē), a mythology, a girl of Crete, who married Iphis; one of the Oceanides; one of the Nereides.

IAN MACLAREN. See WATSON, JOHN.

IANTHINA (ī-an'thē-nä), in zoölogy, the violet snail; a genus of mollusks, family *Haliotidæ*. The shell is thin, translucent, trochiform; the aperture four-sided; the animal with a large head, muzzle-shaped, with a tentacle and an eye-pedicel on each side, but no actual eye. Four species are known, all recent, from the Atlantic Ocean and the Coral Sea. *Ianthina fragilis* is found in nearly every sea, and has helped to extend the range of other species parasitic on its shell.

IAPETUS (yap'ē-tus), regarded by the ancient Greeks as the father of the human race, son of Uranus and Ge, and father of Atlas and Prometheus, is supposed to be the Japheth of Genesis. In astronomy, the name given to the earth or outside satellite of Saturn, discovered in 1671 by J. D. Cassini. It revolves round Saturn in a period of about 79⅓ days.

IBADAN, a city of Africa in Nigeria. The chief industry is agriculture. Pop. is about 150,000.

IBAGUE, or **IBAQUE** (ē-bä'gä), a town of the Republic of Colombia, department of Tolima, about 70 miles W. of Bogota. Pop. about 25,000.

IBEA, a name vaguely applied to British East Africa or the East African Protectorate.

IBERIA (ib-ē'-rē-ä or ī-bē'rē-ä), in ancient geography: (1) A fertile district in Asia, between the Euxine and Caspian seas, which consisted of a plain surrounded by mountains, a part of modern Georgia. (2) An ancient name of Spain, from its river, the Ibērus (Ebro). The Iberi or Iberians, probably the most ancient European nation, formed the basis of the population of Italy, Gaul, Spain, and Lusitania (Portugal). Their language still lives in the Basque. The Celts, who entered the country later, were intermingled with them, the conjoined people being called Celtiberians.

IBERIS (ī-bēr'-is), a candy-tuft; a genus of cruciferous plants, family *Thlaspidæ*. *I. amara*, the bitter candy-tuft—a plant with white or purplish flowers.

IBERNIA. See HIBERNIA.

IBERUS (ī-bē′rus), a river of Spain, now the Ebro, which formerly separated the Roman from the Carthaginian possessions in that country; also a river of Iberia, in Asia, flowing from Mount Caucasus into the Koor.

IBERVILLE, PIERRE LE MOYNE, SIEUR D' (ē-bā-vēl′), a French-Canadian naval and military commander; born in Montreal, July 16, 1661. At the age of 14 he entered the French navy; led an expedition against Schenectady in 1690; was given command of a frigate in 1692; and took Forts Nelson and Bourbon, on Hudson Bay, in 1694 and 1697 respectively. In 1699, by order of the French Government he built Fort Biloxi at the head of the Biloxi Bay, the first post on the Mississippi river. He afterward established other posts in the same region and was preparing to attack the coast of North Carolina, when he died in Havana, Cuba, July 9, 1706.

IBEX (ī′bex), a wild goat, or rather several species of wild goats, the best known of which is the common ibex (*Capra ibex*). It is the ibex of the

IBEX

ancient Romans, the steinbock of the Germans, and the bouquetin of the French. The adult male is about five feet long from nose to tip of tail, and two feet eight inches high at the shoulder. The horns are flat with two longitudinal ridges at the sides, crossed by numerous transverse knots; they are subvertical, curved backward, dark in color. The hair is red-brown in summer and gray-brown in winter, the beard short and dark, the inside of the ears and under part of the tail white. The general color of the female is earthy-brown and ashy. The young are gray. It inhabits the highest regions of the Alps. An analogous species, the *C. pyrenaicus*, is found on the Spanish side of the Pyrenees. Three other species are found upon the Asiatic, and two more on the Abyssinian and Nubian mountains.

IBICUI (ib′i-kwē), a river of Brazil, which rises in the Serra de Santa Anna, province of Rio Grande do Sul, and joins the Uruguay at Yapeyu after a course of 400 miles.

IBIGAU (ib′ē-gō), a very large goat-sucker inhabiting South America; sometimes called the grand goat-sucker.

IBIS, a genus of *Tantalinæ*. The bill is long, cylindrical, and arched from the base; the head naked; the wings broad; the plumage metallic. The sacred ibis was venerated among the ancient Egyptians, who represented it upon their monuments. It is about the size of a hen, the plumage white with the end of the wing feathers black. It is found throughout Africa. The scarlet ibis is abundant on the banks of the Amazon and in many other parts of South America.

IBLIS, in Arabian mythology, Satan, and the father of the Sheytans, or devils.

IBN BATUTA (ibn bä-tö′tä), an Arab traveler and geographer, whose proper name was Abu Abdullah Mohammed; born in Tangiers in 1304. He spent 30 years (1325–1354) of his life in travel. Settling at Fez, in Morocco, in 1354, he wrote the history of his journeys. The course of his travels led him first to Mecca, then to Persia, Mesopotamia, Arabia, the E. coast of Africa, Asia Minor, the Caspian regions, Khwarizm, Bokhara, Afghanistan, and India; thence he proceeded to China by way of Sumatra, and finally came home to Fez in 1349. He died in Fez in 1378.

IBOS, African tribes on the shores of the Gulf of Guinea and around the great delta of the river Niger. They speak a language called Ibo, which is akin to the Ewe and the Tshi. The entire population probably approaches 5,000,000. The towns or settlements of Lakoja, Asaba, Akassa, Bonny, are in this region.

IBRAHIM, the son of the caliph Mahadi, brother of Haroun-al-Raschid, and uncle of Amin and Mamon. He was an excellent poet and musician, and the first orator of his time. He was proclaimed caliph at Bagdad, on the death of his nephew Amin, in 817; but Mamon marching from Khorassan to Bagdad with a powerful army, Ibrahim thought it prudent to abdicate the throne. He died in Samara in 839.

IBRAHIM, sultan of the Turks, son of Achmet; succeeded his brother Achmet IV. in 1640. He besieged and took the capital of Candia from the Venetians in 1644; but his cruelties and debaucheries were so great that the soldiers strangled him in 1649.

IBRAHIM PASHA, a viceroy of Egypt; born in Cavella, Albania, in 1789. He was stepson and successor of Mehemet Ali. In 1819 he became generalissimo of the Egyptian army. In the course of a few campaigns he completely defeated the Wahabees in Arabia. He invaded the Morea in 1825, but the intervention of the Powers in the affairs of

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Greece compelled him to abandon his enterprise in 1828. Mehemet Ali having conceived the design of adding Syria to his dominions, Ibrahim crossed the Egyptian border with an army in October, 1831, took Acre by storm, and quickly made himself master of the whole of Syria. A peace was concluded on May 4, 1833, the Turks not only consenting to give up Syria, but also making over Adana to Ibrahim personally, on a kind of lease. When war broke out again between Mehemet Ali and the Sultan in 1839, Ibrahim was again successful, totally routing the Turks in the great battle of Nisib. The interference of the great Powers eventually compelled him to relinquish all his Syrian conquests and return to Egypt. In 1848 he was installed by the Porte as viceroy of Egypt; but he died in Cairo, Nov. 9, 1848.

IBSEN, HENRIK (ib'sen), a Norwegian novelist and dramatist; born in Skien, Norway, in 1828. His youth was passed in extreme poverty. At 16 he left school and became an apprentice in a drug store at Grimstad. He made several unsuccessful literary attempts, abandoned medicine, and finally, in 1851, was appointed by Ole Bull director of the National Theater at Bergen. In 1858 he became artistic director of the Norwegian Theater at Christiania. His best known dramas are: "The Doll's House," "Brand," "Hedda Gabler," "Ghosts," and "Pillars of Society." His plays are noted for discussions of social matters. He died May 22, 1906.

IBZAN, the 10th judge of Israel, in 1182 B. C. His property is marked by the great number of his children (30 sons and 30 daughters), and his wealth by their marriages—for they were all married.

ICA (ē'kä), a government department of Peru; area 8,718 square miles. It is well watered, fertile and of growing importance. Pop. about 100,000.

ICA (ē-sä'), a river rising in Colombia and flowing about 1,000 miles through Colombia, Ecuador, and Brazil. It empties into the Amazon.

ICARIAN SEA (ē-kar'-ē-an), a portion of the Ægean sea, near the islands of Myconus and Gyarus, and by some supposed to be named for Icarus, who fell into it and was drowned. It extended from Chios to Cos, where the Carpathian sea began.

ICARUS (ē-kar'us), in Greek legend, a son of Dædalus, who with his father fled with wings from Crete to escape the resentment of Minos. His flight being too high proved fatal to him, for the sun melted the wax which cemented his wings and he fell into that part of the Ægean sea which bears his name.

ICE, water in solid form. It is specifically lighter than water which is just about to freeze, and therefore floats in it. The formation of ice takes place generally at the surface of water. This is owing to the peculiarity that, when water has (at the ordinary atmospheric pressure) cooled down to within 3.9° C. of freezing, it ceases to contract as it did before with increase of cold, and begins to expand till it freezes (see HEAT). In some instances, not very well explained, ice forms at the bottom of rivers and is called ground-ice or anchor-ice.

Water in ordinary cases freezes at the degree of temperature marked 0° on the Centigrade and Réaumur's thermometers and 32° on Fahrenheit's, but if it is kept perfectly still it may be cooled to nearly 5.5° C. below freezing (22° F.) and still remain liquid. Sea-water, and salt water in general, freezes at a lower temperature than pure water; in doing this, part of the salt separates, and the ice when melted, gives water that is fresher than that on which the ice was formed. In the neighborhood of the poles, and on mountains of a certain height in all latitudes, there exist immense masses of permanent ice; and even in some districts of Siberia, where a kind of culture is practicable in summer, there are found, at a certain depth below the surface of the earth, strata of ice, mingled with sand. Nansen and Peary discovered that the entire surface of Greenland, except the mountainous coasts, is covered with the largest ice-cap known to exist, having a supposed depth of several thousand feet. The W. coast of Greenland produces most of the icebergs that float in the North Atlantic. From the polar icefields and glaciers which are always protruding themselves into the sea, great floating masses become detached and form icebergs, floes, and drift ice (see GLACIER). From the specific gravity it is calculated that the volume of an iceberg below the water is about nine times that of the protruding part.

The trade in ice is now one of great and increasing importance. Ice has come to be more and more largely used in preserving provisions, both in refrigerating chambers and otherwise. In surgical operations it is used to produce partial anæsthesia; it serves in fevers to cool the mouth and reduce the internal temperature, while ice in bags, applied to the spine, is found helpful in many cases of sea-sickness and in other applications. In 1799 the first cargo of ice was sent from New York to Charleston, and ice was imported into England from Norway on a considerable scale as early as 1823. The export of ice from the United States was begun about 1805 by a merchant named Tudor, who sent ice from Boston to the West Indies. After persevering against many losses he succeeded in 1833 in establishing a trade with Calcutta, Madras, and Bombay; and now not only is it sent in vast quantities to these places, but also Hong Kong and Batavia. Triest sends ice to Egypt, Corfu, and Zante; Switzerland sends it to France, and Germany sometimes gets her supply from the Bavarian lakes.

In the United States the ice harvest is gathered in on an enormous scale and with an elaborate system of apparatus. The ice is cleared from snow by means of an implement called the snow-plane. An ice-plow, drawn by horses, and driven by a man riding on it, or propelled by steam, is then made to cut deep parallel grooves in the ice, and these are again crossed by other grooves at right angles, so that the whole of the surface is deeply marked out into small squares measuring a little more than three feet. A few of these square blocks being detached by handsaws, the remainder are easily broken off with crowbars, and floated away to the ice-storehouses, which are usually built of wood, on the borders of the lake or river. The blocks of ice are covered up with sawdust, a layer being placed between each tier of blocks. Many of these ice-houses are made large enough to hold from 40,000 to 80,000 tons of ice. Throughout the States, except in the extreme N., the manufacture of artificial ice is extensively carried on.

The building of ice-edifices was, and perhaps still is, a winter amusement in Russia; and in the New World, Montreal sets the example of an annual ice-carnival, one of the features of which is the building of a great ice-palace, and of ice-monuments of various kinds.

ICE, ARTIFICIAL, ice frozen by mechanical or chemical means. It has the great advantage of being easily rendered chemically pure, and it can be manufactured in the hottest countries. Its commercial value in the preservation and transportation of meats, fruits, etc., and for other purposes, can scarcely be estimated. The water is first boiled and allowed to settle. It is then distilled, boiled again and run through three kinds of filters. Underneath the great square middle space of the freezing room, which is paved with large rectangular removable tiles, is a series of tanks. These contain a strong solution of brine, and through it run scores of pipes which are charged with liquefied ammonia gas. When this volatile chemical leaves the engine room it is in the form of a fluid, but in making its long journey along the pipes which thread their way through the brine it evaporates into gas.

The evaporating process within absorbs so much heat from the surrounding mass of salt and water that the distilled water in the rectangular ice cans submerged in the brine is congealed into the finest ice. Each can contains 300 pounds of distilled water, which remains in its cold bath 48 hours. Natural gas is often employed in the process of manufacturing artificial ice. As it escapes from the borings with a pressure of 20 to

30 atmospheres, the lowering of the temperature as it is released serves to freeze water even in summer. A still more simple and inexpensive process of preparing artificial ice is used in connection with the newly-perfected method of condensing the atmosphere into a liquid. The rapid evaporation of liquid air absorbs an immense amount of heat and everything brought into contact with it is frozen.

ICEBERG, a mountainous mass of ice floating in the sea. Icebergs are produced by the breaking off of great masses from glaciers which have descended into the sea. When numbers of icebergs freeze together, they form what are called "fields" or "packs," which are often of great extent, stretching across the ocean as far as the eye can reach, and often rising in perpendicular cliffs from 80 to 100 feet above the water.

ICEBOAT, a triangular framework of wood, running by means of a sail—with broad end forward—on three skates or runners 3 feet long by 8 inches deep. There is but one large sail, usually triangular, fastened to a boom and yard, which may be over 30 feet in length. Such an iceboat may be steered by the rudder-skate in almost any direction not in the teeth of the wind, and may attain an average speed of 30 or 40 miles an hour, and sometimes as much as 65. The Hudson and the Shrewsbury rivers may be regarded as the Eastern headquarters of this sport, and there are several iceboat clubs.

ICE CRYSTALS, hexagonal figures with angles of 60°, which water always assumes when it passes from the liquid to the solid state. The crystals of ice cannot ordinarily be seen, because in freezing they are so crowded together; but in thawing, the heat rays act first on the outsides of the crystals, dissolving them to water.

It was formerly supposed that ice was a brittle substance, and even as recently as 1850 the motion of glaciers was explained by the fine splitting of the ice caused by the weight and pressure of the immense masses resting on the lower layers. The experiments made by McConnell and Kidd in 1888 on the plasticity of ice seemed to establish the fact that single crystals were not plastic and that the plasticity of glacier ice as shown by Pfaff in 1875 was a mistake. The discovery made by Koch in 1885 that rods of ice laid on two sharp edges are loaded bent, but recovered their straightness when the weights were removed, seemed to be explained by the same principle. But further experiments made by McConnell and Mügge between 1890–1895 showed that this elasticity is noticeable in some cases but not in all. This elasticity of the ice crystals is now regarded as the true explanation of the movement of glaciers, even though it has not yet been proved that the yielding quality of the ice does not increase with the temperature.

ICE CALORIMETER, a method of determining specific heats by means of ice. Black's calorimeter consists of a block of ice with a cavity in its center, with a cover of ice. The body, whose specific heat is to be determined, is raised to a certain temperature, and then put in the cavity. When the body falls to 32° F., the freezing point, it is wiped clean, as is the cavity itself, with a cloth previously weighed. The increase of weight in the cloth measures the ice converted into water, whence may be deduced the specific heat of the body, the rule being that 79.25, or in round numbers 80 thermal units, are needed to liquefy a pound of ice.

ICELAND, an island belonging to Denmark; between the North Atlantic and the Arctic oceans, 250 miles from Greenland and about 600 miles W. of Norway; greatest length, E. to W., 300 miles; central breadth, about 200 miles; area with adjacent isles, 39,756 square miles. Pop. (1919) 91,912. The coast line for a considerable extent on the S. E. is almost unbroken, but in all other directions presents a continued succession of deep bays, affording a number of natural harbors. The interior is covered by lofty mountain masses of volcanic origin, many of them crowned with perpetual snow and ice, which, stretching down their sides into the intervening valleys, form immense glaciers. These icy mountains, which take the common name of Jökul, have their culminating point in Oräfajökul, which has a height of 6,409 feet. Among the volcanoes the most celebrated is Mount Hecla, in the S., about 5,000 feet high. Numerous hot springs or geysers are scattered throughout the island. There are numerous lakes and rivers. The most valuable mineral product is sulphur, of which the supply appears to be inexhaustible.

The climate is mild for the latitude, but the summer is too cool and damp for agriculture. In the S. parts the longest day is 20 hours, and the shortest 4, but in the most N. extremity the sun at midsummer continues above the horizon a whole week, and of course during a corresponding period in winter never rises.

Vegetation is confined within narrow limits. The most valuable crop is grass, on which considerable numbers of live stock (sheep, cattle, ponies) are fed. The reindeer, though not introduced before 1770, form large herds in the interior. Wild fowl, including the eider duck, whose down forms an important article of commerce, are abundant; the streams are well supplied with salmon, and on the coasts valuable fisheries of cod and herrings are carried on. Manufactures are entirely domestic, and consist chiefly of coarse woolens, mittens, stockings, etc. The exports are wool, oil, fish, horses, feathers, worsted stockings and mittens, sulphur, and Iceland moss.

The inhabitants are of Scandinavian origin. Iceland is a sovereign state, but the King of Denmark is also King of Iceland. Under the charter of May 18, 1920, the King is chief executive, acting through a cabinet, consisting of Minister of Justice, Minister of Trade and Communication, and Minister of Finance. The Althing, or Parliament, consists of: Upper House, 14 members; Lower, 28. Six members of the Upper House are chosen by proportional representation. The other 36 members of Parliament are elected by universal suffrage. From this number 8 are elected by the Althing to complete the Upper House.

Some settlements of Irish monks had been made in Iceland about the end of the 8th century, but the island received the greatest proportion of its population from Norway. In 870 Harold Haarfager had made himself supreme in Norway, and as he treated the landed proprietors oppressively, numbers left the country and went to Iceland. A settled government was established, a sort of aristocratic republic, which lasted for several centuries. Christianity was introduced in 981, and adopted by law in 1000. The Latin language and the literature and learning of the West, introduced by Christianity, were all the more warmly received. Previously to this time the Icelanders had discovered Greenland (983) and part of America (about 1000), and they were now led to make voyages and travels to Europe and the East. In 1264 Magnus VI. of Norway united Iceland with his own kingdom, with which it passed to Denmark in 1380, remaining with the latter in 1814, when Norway was joined to Sweden.

The franchise was granted to women in July, 1915. The sale of liquors was prohibited by an act passed by the Althing in January, 1915. Complete independence is now (1920) being urged by a majority of the people.

ICELAND MOSS, in botany, *Cetraria islandica*, formerly called *Lichen islandicus*. It is found in small quantities on the ground in exposed places in Scotland. It is slightly bitter as well as mucilaginous. An aqueous decoction of it, when cooled, makes a thick jelly. It is used as a tonic and nutrient.

ICELAND SPAR, a transparent calc-spar, or calcite, $CaCO_3$; it may be split along its cleavage-planes into an obtuse rhombohedron and is doubly refracting.

ICE PLANT, in botany, *Mesembryanthemum crystallinum*. It is called ice plant from the many watery pustules covering its leaves and shining like ice. It grows on sandy seashores at the Cape of Good Hope, in the Canary Islands, and in Greece near Athens. There are two varieties, *M. crystallinum* and *M. glaciale;* the latter is that cultivated in gardens. The juice is said to be diuretic, and has been given in liver complaints. The burnt ashes are used by the Spaniards like barilla in glass works. Called from its luster also diamond plant.

ICHANG (ī-chang′), a walled town in the Chinese province of Hu-pei; on the Yang-tsze-Kiang, where it escapes from the limestone gorges and ravines of its middle course; 1,000 miles from Shanghai. In 1877 it was declared open to foreign trade, but in consequence of the difficulties connected with the navigation of the river, the competition of the Chinese, and official jealousy it advanced but slowly. Pop. (1917) 55,000.

ICHNEUMON (ik-nū′mon), a Linnæan genus of insects, now constituting a family or tribe, *Ichneumonidæ*, of the order *Hymenoptera*, section *Terebrantia*. They are extremely numerous in species. Many of them are minute, others are large insects; the species of *Rhyssa* are among the largest of insects. They have the abdomen united to the thorax by a pedicle, which is very often slender. The abdomen itself is slender, and the whole form attenuated. All the *Ichneumonidæ* deposit their eggs either in or on—generally in—the bodies, eggs, or larvæ of insects, or in spiders. Some of them deposit their eggs in aphides. They are thus extremely useful to the farmer and gardener. Particular species of *Ichneumonidæ* are the natural enemies of particular kinds of other insects. Many caterpillars are infested by three or four species of ichneumons.

ICHNEUMON, a genus of digitigrade carnivorous quadrupeds of the family *Viverridæ*, having a much elongated body, small head, sharp muzzle, rounded

ears, and short legs. The species, which are pretty numerous, are natives of Africa and the warmer parts of Asia. One, the Andalusian ichneumon (*Herpestes ichneumon*), occurs in the S. of Spain. They feed on small quadrupeds, reptiles, eggs, and insects. Some of them, particularly the Egyptian ichneumon and the mangouste, mongoose, or mungoose of India, have been greatly celebrated as destroyers of serpents. The Egyptian ichneumon, the ichneumon of the ancients, is larger than a cat, gray, with black paws and muzzle. It was a sacred animal among the ancient Egyptians. The ichneumon is easily domesticated, and is useful in keeping houses free from rats and other vermin.

ICHNOLOGY, the name applied to the modern science of fossil foot-prints, or other impressions on rocks.

ICHTHELIDÆ (ik-thel'ä-dē), the sunfishes of Jordan, a family of *Acanthopteri*. They are percoid fishes with a single dorsal fin, either continuous or deeply divided, with 8 to 12 spines; anal fin large with 3 to 9 spines; body oblong, more or less elevated, sometimes much compressed. Colors usually brilliant, chiefly olive-green, with spots or shades of blue, yellow, orange, or violet. Freshwater carnivorous fishes, many of which build nests which they defend with great courage. Genera about 15, species 40, all of the United States; most abundant in the Mississippi valley. Sub-families, *Micropterinæ*, *Centrarchinæ*, and *Ichthelinæ*.

ICHTHYOL, a medicine prescribed for its effect upon the alimentary canal and the general system. Its basis is a bituminous mineral rich in fish fossils.

ICHTHYOLOGY (ik-thē-ol'ō-jē), the science which treats of fishes. See FISH.

ICHTHYOPSIDA (ik-thē-op'sē-dä), one of the three great primary divisions of the *Vertebrata* (the others being *Sauropsida* and *Mammalia*), comprising the fishes and amphibia.

ICHTHYOPHAGY, the practice or habit of eating fish; fish diet.

ICHTHYORNIS (ik-thē-or'nis), a fossil genus of carnivorous and probably aquatic birds, one of the earliest known American forms. It is so named from the character of the vertebræ, which, even in the cervical region, have their articular faces biconcave as in fishes. It is also characterized by having teeth set in distinct sockets.

ICHTHYOSAURUS (ik-thē-ō-sou'ros), an extinct fish-lizard; the typical genus of the order *Ichthyosauria*. It consists of gigantic fossil marine reptiles, with jaws which show them to have been carnivorous. Their vertebræ were fishlike, their paddles like those of a porpoise or a whale, and their long powerful tail a propeller which enable them to dart with great rapidity through the water. The genus extended from the Trias of Germany to the White Chalk of England.

ICICA (ī'sē-kä), a genus of *Amyrids*, family *Burseridæ*. It consists chiefly of tall trees with balsamic or resinous juice, unequally pinnate or ternate leaves, and racemes or heads of small whitish or greenish flowers. About 20 species are known, found mostly in the warmer parts of America. *Icica guianensis* furnishes incense-wood; *I. icicariba*, part of the American elemi; *I. carana*, the American balm of Gilead; *I. aracouchini*, the balsam of acouchi; *I. ambrosiaca*, the resin of coumia; and *I. altissima*, the curana, samaria, acuyari, mara, or cedarwood of Guiana.

ICONIUM (ē-kō'nē-um), an ancient town of Asia Minor, on the W. edge of the plateau that skirts the N. slopes of the Taurus Mountains. The capital under the Romans of Lycaonia, it was three times visited by St. Paul, who founded there a Christian Church. In 708 it fell into the hands of the Arab conquerors. Its prosperity culminated in the end of the 11th century, when it was made the capital of the Seljuk empire. In 1190 Frederick Barbarossa defeated the Turks in the neighborhood, and captured Iconium. In 1832 Ibrahim Pasha defeated the Turks there. The modern town, called KONIA, the capital of the Turkish vilayet of the same name, is a place of some 30,000 inhabitants, who live by commerce, by making stockings and gloves, and on the contributions of the numerous pilgrims who visit the holy places of the town. Here is the principal monastery of the Mevlevi or "dancing" dervishes in the Ottoman empire.

ICONOCLAST (ī-kon'ō-klast), a breaker or destroyer of images; a title applied to two of the Byzantine emperors, Leo the Isaurian, and his son Constantine Capronymus, who during their reigns, which extended from 726 to 795, persevered in overthrowing the images in the Christian churches, and in extirpating their worship. The 338 bishops, also, who attended a council at Constantinople in the reign of the latter prince, and declared themselves in favor of his

views, were stigmatized by the orthodox party under the same name.

ICONOGRAPHY, in an extended sense, the description of any figures found in paintings and sculpture, as well as monumental records of ancient date; but in its restricted signification this word is confined to descriptions and drawings of any sculptured images or paintings of the human form, animals, and inanimate objects, that are found in buildings and appurtenances, and furniture devoted to ecclesiastical purposes.

ICTERIA (ik-ter'ē-ä), a genus of birds placed by Swainson under his sub-family *Brachypodiæ* (short-footed thrushes). *I. virens*, or *viridis* (*I. polyglotta* of Wilson) the yellow-breasted chat, is found in the United States. It has great powers of imitating the sounds which it hears.

ICTERIDÆ (ik-ter'ē-dē), a name for orioles; a family of *Passeres*, insessorial birds. The bill has the commissure angulated, with no notch; the primaries nine; the legs stout; the plumage usually brilliant; the notes sharp, often melodious, in other cases harsh. Subfamilies three, *Agelainæ*, *Icterinæ*, and *Quiscalinæ*. About 20 genera and 100 species are known, all American. The Baltimore oriole or hang-nest is the *Icterus galbula*. It is a favorite bird in the eastern part of North America and is a migratory bird, arriving in late spring and leaving again in midsummer or up to early fall. Its plumage is black and orange.

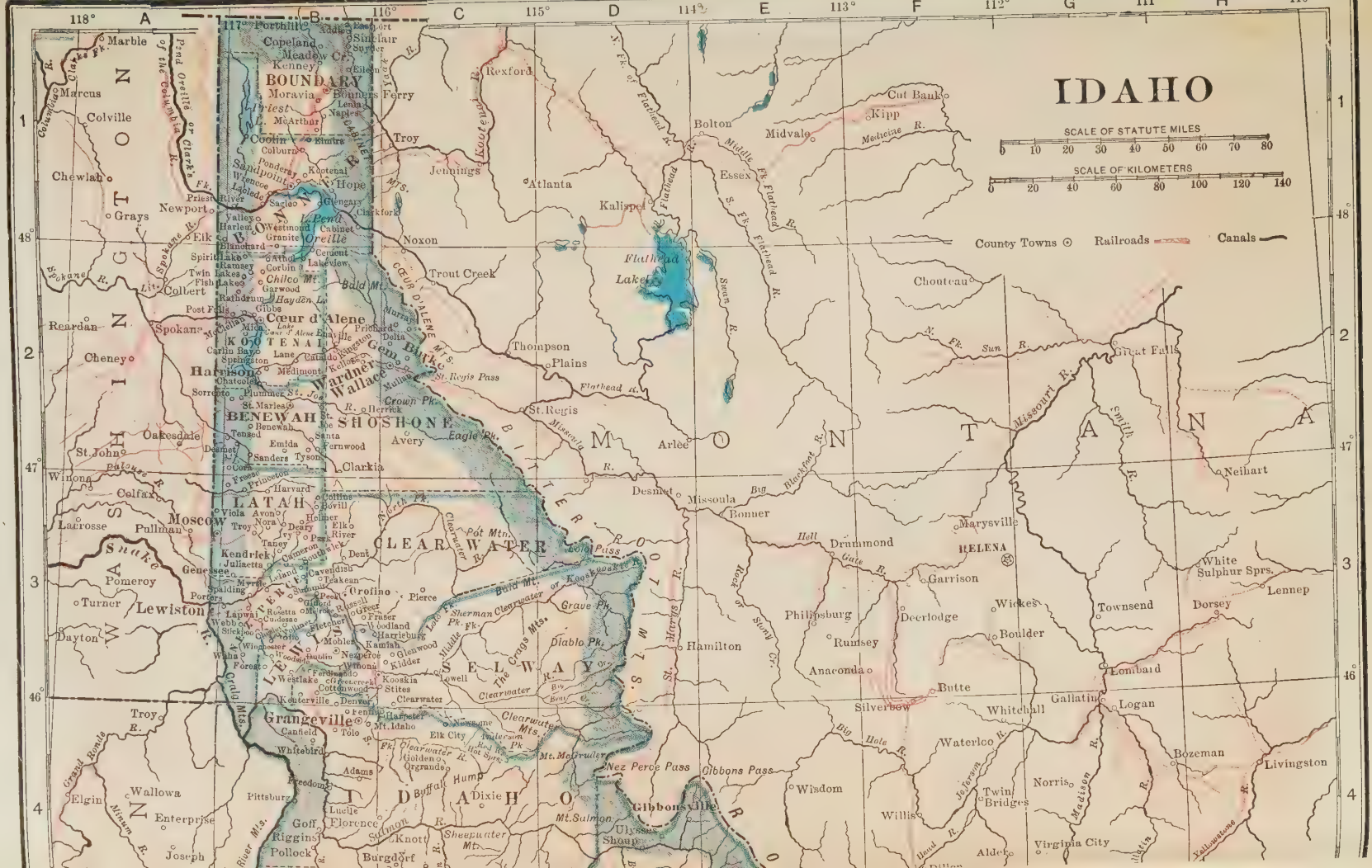
IDA, a high mountain range in Asia Minor, extending from Phrygia through Mysia into Troas. The city of Troy was situated at its base. It is the scene of many ancient legends. The S. part of the range was called Gargarus, the highest peak of which is about 4,700 feet above sea. Here there was a temple of Cybele. From Ida flow several famous streams, as the Granicus, Simois, and Scamander. There is another Ida in Crete, now called Psiloriti.

IDAHO, a State in the Western division of the North American Union; bounded by Montana, Wyoming, Nevada, Oregon, Washington and British Columbia; admitted to the Union July 3, 1890; number of counties, 41; capital, Boisé; area 84,800 square miles; pop. (1900) 161,772; (1910) 325,594; (1920) 431,866.

Topography.—The surface of the State is exceedingly mountainous. The Rocky Mountains form the N. E. boundary separating Montana from Idaho, and send out spurs in a W. direction extending to the Sierra Nevadas. The principal ranges are the Salmon, Bitter Root, Bear River, and Saw Tooth. The Salmon range extends along the Salmon river and reaches an altitude of 12,000 feet; the summits being rugged and several being covered with snow. The Goose Creek and Bear River mountains extend along the S. portion of the State. Three-fourths of the State—the S. portion—is arid, agriculture being practiced only by means of irrigation. The soil is very fertile and the water supply abundant. The principal irrigated sections of the State are in the Bear, Snake, Boisé, Payette and Weiser river valleys. These valleys lie at an altitude of from 700 to 5,000 feet. The Snake river, a tributary of the Columbia, and the Wood, Bruneau, Boisé, Payette, Weiser and Salmon rivers, its principal branches, form the drainage system of the S. portion of the State; the principal rivers of the N. part are the Spokane, St. Joe, St. Mary's, Clearwater, Cœur d'Alêne, Priest, and North Fork of the Columbia. The entire State drains into the Columbia with the exception of a small portion in the S. E., which is drained by Bear river into the Salt Lake basin. A large area in the S. portion is drained by streams which sink a short distance from the mountains (the lost river drainage system) and find an outlet to the Snake river by subterranean channels. There are numerous lakes, including the Pend d'Oreille, Cœur d'Alêne, Bear, Henry, and Payette lakes. There are many beautiful waterfalls in the State, the Snake river having four important ones, namely, Shoshone, a 210-foot fall, Twin, Salmon, and American Falls. The mean elevation of the State is about 4,700 feet.

Geology.—Most of the State is covered with Azoic, Eozoic, and Tertiary formations. Numerous fossils have been found, including the remains of the mastodon, elephant, tapir, monkey, alligator, and saurian families. Large portions of the State are of recent volcanic formation, and the whole region is noted for its geysers, steam and soda springs and natural hot baths.

Soil.—The soil is largely of volcanic origin, and is very fertile when water is applied. The mountains are for the most part covered with forests, which are largely evergreen. The S. counties are covered with sage plains which, under irrigation, are well adapted to agriculture. The N. portion of the State and the upper portions of the Boisé, Weiser, and Payette valleys are covered with dense forests, the principal


IDAHO
SCALE OF STATUTE MILES
0 10 20 30 40 50 60 70 80
SCALE OF KILOMETERS
0 20 40 60 80 100 120 140
County Towns
Railroads
Canals
WASHINGTON
OREGON
IDAHO
MONTANA
BOUNDARY
BENEWAH
KOOTENAI
SHOSHONE
Bonner
Kootenai
Shoshone
Benewah
Latah
Nez Perce
Lewis
Clearwater
Idaho
Lemhi
Custer
Valley
Gem
Boise
Ada
Canyon
Owyhee
Elmore
Camas
Blaine
Lincoln
Gooding
Jerome
Twin Falls
Cassia
Minidoka
Power
Oneida
Bannock
Bingham
Bonneville
Jefferson
Madison
Fremont
Teton
Clark
Butte
Lemhi
Custer
Lost River Range
Lemhi Range
Salmon River Mts.
Bitter Root Mts.
Coeur d'Alene Mts.
Clearwater Mts.
Craig Mts.
Seven Devils Mts.
Owyhee Mts.
Sawtooth Mts.
Pioneer Mts.
Lemhi Mts.
Beaverhead Mts.
Centennial Mts.
Snake River Plain
Big Lost River
Big Wood River
Little Wood River
Camas Prairie
Pahsimeroi Valley
Lemhi Valley
Salmon River
Clearwater River
Snake River
Boise River
Payette River
Weiser River
Owyhee River
Bruneau River
Malheur River
Portneuf River
Blackfoot River
Bear River
Henrys Fork
Teton River
Big Wood River
Little Wood River
Big Lost River
Little Lost River
Birch Creek
Medicine Lodge Creek
Beaverhead River
Ruby River
Red Rock River
Madison River
Gallatin River
Jefferson River
Big Hole River
Bitter Root River
Flathead River
Kootenai River
Pend Oreille River
Priest River
Spokane River
Coeur d'Alene River
St. Joe River
St. Maries River
Palouse River
Potlatch River
Lochsa River
Selway River
Middle Fork Salmon River
South Fork Salmon River
Little Salmon River
Weiser River
Payette River
North Fork Payette River
Boise River
South Fork Boise River
Middle Fork Boise River
North Fork Boise River
Owyhee River
Bruneau River
Jarbidge River
Malheur River
Snake

ADAMS
BOISE
CUSTER
LEMHI
LEMHI IND. RES.
CUSTER
BOISE
VALLEY
WASHINGTON
PAYETTE
WEISER
CAMAS
BLAINE
HAILEY
BUTTE
CLARK
FREMONT
YELLOWSTONE NATIONAL PARK
JEFFERSON
MADISON
BONNEVILLE
BINGHAM
IDAHO FALLS
BLACKFOOT
FORT HALL INDIAN RES.
ADA
BOISE
CANYON
CALDWELL
NAMPA
ELMORE
MOUNTAIN HOME
OWYHEE
DE LAMAR
SILVER CITY
LINCOLN
SHOSHONE
GOODING
JEROME
TWIN FALLS
CASSIA
OAKLEY
POCATELLO
CARIBOU
BANNOCK
POWER
ONEIDA
FRANKLIN
PRESTON
MONTPELIER
PARIS
BEAR LAKE
Lemhi Range
Lost River Mts.
Pahsimeroi Valley
Salmon River
Snake River
Big Lost River
Little Lost River
Big Wood River
Little Wood River
Camas Creek
Boise River
Payette River
Weiser River
Owyhee River
Bruneau River
Jarbidge Mts.
Teton Range
Jackson L.
Yellowstone L.
Reynolds Pass
Red Rock R.
Lima
Junction
Dillon
Grayling
Gardiner
Redrock
Lyons
Kilgore
Spencer
Dubois
Rexburg
Idaho Falls
Blackfoot
Pocatello
Montpelier
Paris
Bedford
Preston
Malad
Oakley
Burley
Rupert
Twin Falls
Jerome
Gooding
Shoshone
Hailey
Ketchum
Sun Valley
Stanley
Challis
Mackay
Arco
Howe
Atomic City
Aberdeen
American Falls
Soda Springs
Grace
Lava Hot Springs
Swan Lake
Oxford
Treasureton
Liberty
Georgetown
Bennington
Montpelier
Aeolus
Raymond
Dingle
Afton
Border
Star Valley
Cokeville
Kemmerer
Fairview
Thatcher
Portneuf
Marsh Valley
Arbon
Downey
Inkom
Lava Hot Springs
Chesterfield
Henry
Williamsburg
Wayan
Glen
Irwin
Rosa
Ammon
Iona
Antelope
Sunnydell
Heise
Victor
Driggs
Teton
Tetonia
Felt
Squirrel
Lillian
Ashton
Chesterfield
Drummond
Marysville
Palisade
Newdale
Parker
Teton
Hamer
Camas
Lorenzo
Archer
Herbert
Roberts
Lewisville
Rigby
Menan
Basalt
Firth
Shelley
Ucon
Presto
Ft. Hall
Ross Fork
Chub Spr.
Herman
Gray
Springfield
Tilden
Sterling
Aberdeen
Rockland
Neeley
Inkom
Hatch
Bancroft
Alexander
Soda Spr.
Conda

timber being white and yellow pine, fir, cedar, spruce, hemlock, and tamarack.

Mineralogy.—Gold, silver, and lead occur in abundance throughout all the mountains in the State. Large bodies of gold-bearing gravel are found along the Snake, Salmon, and Boisé rivers, the Boisé basin being noted for its auriferous gold deposits. About one-third of the lead mined in the United States comes from the Cœur d'Alêne district. The production and value of the principal metals in 1917 was as follows: lead, 196,780 tons, valued at $33,846,119; zinc, 38,927 tons, valued at $8,145,122; copper, 7,827,574 pounds, valued at $2,136,928; silver, 12,029,338 fine ounces, valued at $9,912,175; gold, 38,933 fine ounces, valued at $804,809. The total value of the mineral products of the State in 1917 was $55,244,026.

Agriculture.—The N. part of the State is noted for its wheat. Owing to the sheltered location of many of the irrigated valleys agricultural products cover a wide range. All cereals and the ordinary garden vegetables and small fruits are grown. Peaches, pears, apples, apricots, and prunes are the principal products of horticulture. The mountains of the S. portion afford excellent pasturage and, with irrigation, the plains of the Snake river and its tributary valleys are rapidly being converted into cereal fields. The production and value of the principal crops in 1919 was as follows: corn, 840,000 bushels, valued at $1,386,000; oats, 7,700,000 bushels, valued at $7,546,000; barley, 3,360,000 bushels, valued at $4,704,000; wheat, 18,705,000 bushels, valued at $38,345,000; hay, 1,625,000 tons, valued at $35,750,000; potatoes, 5,400,000 bushels, valued at $8,154,000.

Manufactures.—There were in 1914, 698 manufacturing establishments in the State, employing 8,919 wage earners. The capital invested amounted to $144,961,000; wages paid amounted to $7,491,000; value of materials used to $14,892,000; and the value of the finished product to $28,454,000. The principal articles of manufacture include flour and grist, railroad cars, lumber and timber products, printed matter, harness and saddlery, dairy products, furniture, foundry and machine-shop products, clothing, tobacco, and cigars.

Banking.—In 1919 there were 71 National banks in operation, having $4,385,000 in capital, $3,298,882 in outstanding circulation, and $18,643,000 in United States bonds. There were also 138 State banks.

Education.—There are about 125,000 pupils in the public schools. The teachers number about 3,000. The average salary of women teachers is about $73.00 a month and of men teachers about $95.00. The total expenditure for educational purposes is about $5,000,000 annually. For higher education there were high schools (public), private secondary schools, public normal schools, College of Idaho and the University of Idaho.

Churches.—The strongest denominations in the State are the Mormon, Roman Catholic, Methodist Episcopal, Presbyterian, Congregational, Lutheran, and Protestant Episcopal.

Railroads.—The total railway mileage in the State in 1919 was 3,629 miles of single main line track. There was practically no new construction in the past years. The systems having longest mileage are the Oregon Short Line, the Northern Pacific, and the Chicago, Milwaukee and St. Paul.

Finances.—The receipts for the biennial period ending Sept. 30, 1918, were $8,641,270, and the disbursements $9,121,013. There was a balance at the end of the year of $705,187. The State has a bonded debt of about $3,000,000.

Charities and Corrections.—The charitable and correctional institutions of the State include the Soldiers' Home at Boisé; Insane Asylum at Blackfoot; Sanitarium at Orofino; Sanitarium at Nampa; and a penitentiary at Boisé.

State Government.—The governor is elected for a term of two years. Legislative sessions are held biennially, and are limited in length to 60 days each. The Legislature has 37 members in the Senate and 65 in the House. There are two representatives in Congress. The State government in 1920 was Republican.

History.—Idaho was for years successively a part of Oregon, Utah, Washington, and Nebraska, and was explored early in the 19th century by Lewis and Clarke. A mission was established at Cœur d'Alêne in 1842, but till the discovery of gold in 1852 the State was visited only by hunters. Idaho was organized as a Territory, March 3, 1863, but in 1864 part of it was set apart as Montana and in 1868, another part, forming part of Wyoming. In the summer of 1889 a convention framed a constitution and a petition for admission to the Union, being admitted the following year, the 30th State in order of admission.

IDAHO FALLS, a city of Idaho, the county seat of Bonneville Co. It is in the midst of an important agricultural region, well irrigated. It has excellent water power. It has a sugar factory

and other industries. There is a Carnegie library and other public buildings. Pop. (1910) 4,827; (1920) 8,064.

IDAHO, UNIVERSITY OF, a coeducational, non-sectarian institution in Moscow, Ida.; founded in 1889; reported at the close of 1919: Professors and instructors, 80; students, 782; volumes in the library, 45,000; productive funds, $6,000,000; income, $684,000; president, Ernest Hiram Lindley, Ph. D.

IDALIUM (id-al'yum), now DALI, a promontory of the E. coast of Cyprus on which was a celebrated temple of Venus; hence her surname "Idalia."

IDDESLEIGH, STAFFORD HENRY NORTHCOTE, 1st EARL OF (id'desli), an English statesman; born in 1818. He was educated at Balliol College, Oxford, became private secretary to Gladstone in 1843, and was called to the bar in 1847. In 1851 he succeeded his grandfather in the family baronetcy. He held various offices, being long member for North Devon. He published a treatise, "Twenty Years of Financial Policy," in 1862. He was made special commissioner to the United States to arrange the "Alabama" difficulty. Subsequently he was secretary for India (1867–1868) and chancellor of the exchequer (1874–1880). Upon Mr. Disraeli's elevation to the peerage he became leader of the Lower House. He was elected lord rector of Edinburgh University in 1883. Lord Salisbury having undertaken to form a government, he was created (1885) Earl of Iddesleigh, and became first lord of the treasury. He died in 1887.

IDE, HENRY CLAY, an American diplomat; born at Barnet, Vt., in 1844. He graduated from Dartmouth College in 1866. He was admitted to the bar and was State's attorney of Vermont from 1876 to 1878. From 1882 to 1885 he was a member of the Vermont Senate. He was United States Commissioner to Samoa in 1891 and was Chief Justice of Samoa under joint appointment of England, Germany and the United States from 1893 to 1897. He was a member of the Commission to establish civil government in the Philippines in 1900, and was Secretary of Finance and Justice in the Philippines in 1901. He acted as Vice-Governor in 1904–1905, acting governor in 1905–1906, and Governor-General in 1906. He was Minister to Spain from 1909 to 1913. He wrote several volumes on the administration and government in the Philippines and contributed articles to various publications.

IDE, a fish of the carp family, the *Leuciscus idus*, found in rocky lakes of Northern Europe. It is a good table fish.

IDEA, a mental image, form, or representation of anything. The word idea has been taken in very many and very different senses, the history of which would be a history of philosophy. Aristotle (384–322 B. C.) taught that though the One, apart from and beside the many, does not exist, none the less must a unity be assumed as (objectively) present in the many; and the Stoics (Zeno, 355–263 B. C.) maintained the doctrines of subjective concepts formed through abstraction. According to Plutarch of Chæronea (toward the end of the 1st century), the ideas were intermediate between God and the world; they were the pattern and God the efficient cause. For Plotinus (203–270) the primordial essence was elevated above the Platonic ideas, which were emanations from the One. St. Thomas of Aquin (1227–1274) recognizes a form in which the universal exists before things—viz., as ideas in the divine mind. For Descartes (1596–1650), "ideas are the forms of things received into the soul"; for Spinoza (1632–1677) the "concepts formed by the mind as a thinking thing"; and Locke (1632–1704) says, " whatsoever the mind perceives in itself, or is the immediate object of perception, thought, or understanding, that I call an idea." In the philosophy of Leibnitz (1646–1716) ideas are the active forces of his monads; Berkeley (1684–1753) used the word as equivalent to phenomenon; Hume (1711–1776) defines ideas as "copies of perceptions," and Condillac (1715–1780) as "mental representations of objects of apprehension." Kant (1724–1804) gives the name of ideas to those "necessary conceptions of the reason for which no corresponding real objects can be given in the sphere of the senses." According to Erasmus Darwin (1731–1802), an idea is a "contraction, or motion, or configuration of the fibers which constitute the immediate organs of sense." James Mill (1773–1836) calls ideas "what remain after sensation has gone," and Herbart (1776–1841) "typical conceptions." Schopenhauer (1788–1860) posits as intermediate between the universal will and the individual in which it appears, various ideas as real species forming stages in the objectification of the will.

IDEALISM, the name given to certain philosophical systems which deny the individual existence of object apart from subject; or of both apart from God or

the Absolute. Idealism denies the existence of bodies, holding that their appearances are merely ideas (perceptions) of the cogitant subject. Subjective idealism teaches that these ideas are produced by the mind; objective idealism that God is their author. To these two hypotheses all idealism may be reduced. Zeno of Elea, in classic times, anticipated modern idealism. Berkeley developing Locke, Descartes, Spinoza, and Leibnitz did much to revive idealism. Kant has been claimed as an idealist—Franck makes Kant's *idéalisme subjectif* one of the three divisions to which he refers all modifications of Ideal philosophy. Fichte, Schelling, and Hegel are the founders of the great schools of German Idealism, called respectively, Subjective, Objective, and Absolute. For Fichte the object has no real existence, but is dependent on the subject; the non-Ego is the product of the Ego (the human soul). For Schelling object and subject are equally real, and equally manifestations of the Ego (in his system the Absolute, the Substance of Spinoza). Hegel's only reality in this case is the relation between the Ego and the non-Ego.

IDEAL REALISM, a name for the teachings of an eclectic branch of the Kantian school, who attempted to build up a harmonious system without sacrificing Kant's realistic postulates to his idealistic teachings, or conversely giving up the latter in favor of the former. Schleiermacher, Ulrici, and Trendelenburg were of this section of Kantists.

IDENTITY, the quality or state of being identical or the same; sameness; identicalness.

Personal.—The sameness of each individual throughout life, though the atoms of which the body are composed, the disposition, habits, and modes of thought, are continually changing.

Principle.—The principle that every ens is necessary itself and not any other ens. This follows directly from the first principle of Scholastic Philosophy, sometimes called the Principle of Contradiction. The same thing cannot be and not-be at the same time.

Philosophy.—The name given to the objective idealism of Schelling. According to this system, object and subject, real and ideal, nature and spirit are indentical (not in themselves, but) "in the Absolute," of which they are manifestations.

IDEOLOGY, a term introduced by Destutt de Tracy in his "Elements of Ideology" (1801–1804) to designate the philosophy of the French Sensational School. The mind, according to de Tracy, is nothing but sensation, or more properly the sensibility of which sensation is the exercise. The word has now come to have a more extended meaning, and its use is not confined to a particular school.

IDES, in the ancient Roman calendar, the 15th day of the months March, May, July, and October, and the 13th day of the other months.

IDIOCY, a condition defined by Ireland as "mental deficiency or extreme stupidity depending upon malnutrition or disease of the brain occurring either before birth or before the evolution of the mental faculties in childhood; while imbecility is generally used to denote a less decided degree of such mental incapacity." The difference between both conditions and dementia is that the dement was once sane and responsible, the idiot and the imbecile never developed mental capacity at all; they remained arrested children. The name amentia has been given to idiocy. There are great varieties of idiocy and imbecility. Some of the lowest have no speech, no power of distinguishing between one person and another, no affection or hatred, no feelings of pleasure or pain, no power to take care of themselves, and can never be taught any of these things. In body such idiots are dwarfish, misshapen, ugly, with the features and expression of face often of the lowest of the lower animals, with no power of walking. This being the condition of the lowest varieties, they rise gradually in the scale till many imbeciles are beautiful in features, and reach normal bodily development, but are slightly wanting in some essential mental faculty.

Idiots and imbeciles differ much in their capacity for further development under even favorable circumstances. Some can be greatly elevated toward the standard of average humanity, and can even be rendered fit to earn their own livelihood in simple trades of manual labor, while others cannot be in any way improved. They are especially subject to certain bodily diseases of degeneration, such as scrofula, consumption, rickets, and diseases of deficient nutrition generally. Two-thirds of idiots die of consumption. The great aims in treatment are to improve the bodily nutrition, the nervous and muscular action, and the habits, and to evolve the possible intelligence by an education through the senses. Some of them have one faculty or capacity fairly or even extraordinarily developed, while the general men-

tal power is weak. Some are good musicians. Some can calculate well, while others are ingenious in constructiveness.

Ireland classifies idiocy into 10 divisions: (1) Genetous, (2) Microcephalic, (3) Eclampsic, (4) Epileptic, (5) Hydrocephalic, (6) Paralytic, (7) Cretinic, (8) Traumatic, (9) Inflammatory, and (10) by deprivation of the senses. From this it is seen that there are many pathological causes of the disease. It is a popular error to suppose that all idiots have small heads. Three-fifths of them have larger heads than average men, and only a few (the microcephalic) are small headed. It is quality more than quantity of brain that counts for mind. The general causes of idiocy have not yet been fully made out. It is unquestionably hereditary in at least 50 per cent.

IDOLATRY, the worship of idols, images, or representations made by hands to represent divinity, or of any inanimate object; the worship of false gods; paganism.

According to Lubbock idolatry or anthropomorphism is the fifth of six progressive stages in the history of religion.

Ethnic.—The ancient Egyptians, the Greeks, and the Romans, the modern Chinese, Burmese, Hindus, etc., are all in that fifth stage of religious development.

Jewish.—In all countries where idolatry exists, the tendency is for the uneducated to worship the idol as if it were a deity. Denunciations by the prophet Isaiah are directed against this. When Aaron made the golden calf he built an altar and proclaimed a feast to Jehovah, but the people said: "These be thy gods, O Israel." Idolatry is forbidden in the Decalogue (Exodus xx: 3-6).

Christian.—In the 8th and 9th centuries a party in the Eastern Church (see ICONOCLAST) denounced image worship as idolatry, and the Emperor Leo interdicted the images, but they were restored by the Empress Irene. (See IMAGE WORSHIP.)

IDRIA, a mining town in the former Austrian crownland of Carniola, famous for its quicksilver mines (discovered in 1497). Pop. about 17,500.

IDRIALIN, or **IDRIALINE**, in chemistry, C_{42} $H_{28}O$, a white crystalline substance, extracted from idrialite. The best solvent is oil of turpentine or amylic alcohol. Heated with sulphuric acid, an intense blue color is formed; with nitric acid an insoluble red powder is produced.

IDYL, or **IDYLL**, a short poem, the subject, or at least a necessary accompaniment, of which is a simple description of pastoral nature, life, and scenery, or of events in pastoral life; as the idyls of Theocritus among the ancients; Goldsmith's "Deserted Village," etc.

IDZU, a province of Japan. It consists of a mountainous peninsula with numerous bays. It is 32 miles long and 16 miles wide. Its chief industries are the rearing of silk worms and the reeling of silk. It has several rivers, the most important of which is the Kanogawa. The chief towns are Mishima and Shimoda.

IF (ēf), a rocky island in the Gulf of Marseilles, crowned by a castle, the Château d'If, which was built by Francis I. of France, and subsequently used as a state prison. Here were confined, among others, Mirabeau and the Duke of Orleans (Philip Egalité), not to mention "Monte Cristo."

IFNI (if'nē), a small seaport in southern Morocco, 35 miles S. of Aguilon, ceded to Spain in 1883.

IGASURINE, an alkaloid discovered in 1853 by Desnoix, in the mother-liquors from which strychnine and brucine had been precipitated by lime. It crystallizes in feathery groups of white silky needles, which have the bitter taste and poisonous properties of strychnine and brucine. It resembles brucine in its behavior toward reagents.

IGBARA, a name given to a negro people living in the Niger valley in the S. W. of Nigeria. The territory is made of different kingdoms, among them that of Nyffe or Nupé, of which the capital is Bida, and Yarriba, comprised within the Lagos protectorate. The Igbara speech resembles that of Ibo and Ewe. The tribes have an indigenous culture and are partly Mohammedan.

IGLAU (ēg'lou), the second largest town of Moravia; on the Iglawa river; 123 miles N. N. W. of Vienna. It has some old churches (one founded in 799). Its staple industries have always been the manufacture of cloth and woolen goods; glass and tobacco are also manufactured. It has a large trade in corn, flax, wool, cloth, and timber. Here on July 5, 1436, the Emperor Sigismund signed the Prague Compactata, after which he was accepted as king by the Bohemians. In the Thirty Years' War the town was taken by the Swedes and recaptured by the Imperialists.

IGLOOLIK (ig-lö'lik), an island near the E. end of the Fury and Hecla Strait in the Arctic Ocean; the place where Parry passed the winter of 1822–1823.

IGNACIO (ig-nä'sē-ō), a group of islands of Mexico, in the Gulf of California, off the coast of the State of Sinaloa.

IGNACIO, JOAQUIM JOSÉ, a Brazilian naval officer; born in 1808. He effected a brilliant movement on the Paraguay and won notable victories. He died in 1869.

IGNATIEF, NICHOLAS PAVLOVITCH (if-nät'ē-ef), a Russian diplomatist; born in St. Petersburg in 1832. He served in the Crimean War and was made a colonel in 1856. Ambassador to Peking, 1860; minister at Constantinople, 1864, and envoy-extraordinary in 1867–1878. He was conspicuous in the negotiations before and after the Russo-Turkish War, and was appointed minister of the interior, but was dismissed in 1882. He was later governor-general of Irkutsk. He died in 1908.

IGNATIUS (ig-nā'shus), surnamed THEOPHORUS, a father of the Church, and martyr; a native of Syria, and disciple of St. John the Evangelist, by whom he was made bishop of Antioch, A. D. 68. After discharging the episcopal office with great zeal for 40 years, the Emperor Trajan, passing through Antioch, endeavored to prevail upon him to renounce his religion. Ignatius continued inflexible; on which the emperor sent him to Rome, where he was exposed to wild beasts in the amphitheater. His disciples conveyed his bones to Antioch.

IGNATIUS, a Church father; born about 798. When his father, the Emperor Michael I., was deposed he entered a monastery, assuming the name of Ignatius. In 846 he was raised to the patriarchate of Constantinople. His refusal to admit Bardas, brother of the Empress Theodora, as a communicant, on account of his reported immorality, led to his deposition in 857. He was reinstated in 867. He died in 878.

IGNATIUS BEAN, the seeds of the so-called *Ignatia amara;* but the genus *Ignatia* is now given up, having been founded on fragments of two different plants not akin to each other. Ignatius beans, called in parts of India papeeta, have been given in cases of cholera.

IGNATIUS OF LOYOLA. See LOYOLA.

IGNEOUS, in geology, a term applied to all agencies, operations, and results which seem connected with, or to have arisen from, subterranean heat; and igneous rocks include the Volcanic, Trappean, and Granitic series. Geologists use the term igneous as synonymous with Plutonic, pyrogenous, unstratified, and other similar terms.

IGNIS FATUUS (ig'nis fä-tū'us), a kind of luminous meteor, which flits about in the air a little above the surface of the earth, and appears chiefly in marshy places, or near stagnant waters, or in churchyards, during the nights of summer. Called also "Jack-with-a-lantern" and "Will-o'-th'-wisp." The most general opinion is, that it is due to the emanation and spontaneous combustion of some highly inflammable gas, given off by decaying organic matter.

IGOR I. (ē'gor), a grand duke of Russia; succeeded his father Rurick, and, after making war a long time against his neighbors, proceeded to ravage the East, deluging with blood Pontus, Paphlagonia, and Bithynia. He left his throne to his wife Olga, who, in her old age, embraced Christianity. He died in 935.

IGOROT, inhabitant of northern Luzon in the Philippines. The term means "people of the mountain," and the name is derived from the fact that they have been associated from a remote age with the interior districts of Bontoe, Benguet, Lepanto, and Amburayan. Their chief occupation is agriculture, and they live in houses grouped together and roofed with plants, grass, and large leaves. They are skillful in the art of irrigation, and construct reservoirs on the mountain sides, from which they allow the water to flow by means of drain and flues.

While the customs and degree of cultural development are on a level among the different tribes, the Bontoes are rather more warlike than the other groups, and still engage in their ancient practice of head hunting. On the other hand the inhabitants of Benguet, Lepanto, and Amburayan are inclined to peaceful industrial pursuits, and are skilled in mining and metal work. The total number of the Igorot tribes is estimated at about 275,000.

IGUALA (ē-gwä'lä), a town in Guerrero, Mexico; pop. about 10,000. It is an industrial center. The so-called "Plan of Iguala" got its designation from this place.

IGUANA (ig-wan'ä), the typical genus or the family *Iguanidæ*. The teeth are three-lobed; the throat with a pendulous dewlap, the edge of which is toothed. The common American iguana is yellowish-green above, marbled with pure green, the tail ringed with brown. It has a crest of large dorsal spines. It is

from four to five feet long. It is common in the warmer parts of America.

IGUANA

IGUANODON, an extinct gigantic reptile, closely resembling the iguana in the form of its teeth, whose remains were discovered by Dr. Mantell in the Wealden formation of the S. of England. From its dentition there seems to be no doubt that it was herbivorous. Mantell estimated this animal to have been 70 feet long, but the complete skeleton now set up at Brussels is 23 feet in full length. The iguanodon formed a family of the Dinosaurians, bird-like reptiles with long hind and short forelegs, and three-toed feet.

ILANG-ILANG (*Cananga odorata*), a large tree of the order *Anonaceæ*, cultivated in India and the Philippines, and yielding from its flowers a rich perfume.

ILCHESTER, an ancient English village of Somersetshire. Supposed to be the "Ischalis" of Ptolemy, it was the principal station of the Romans in this region. Ilchester is the birthplace of Roger Bacon.

ILDEFONSO, SAN, a town of Spain, province of New Castile, on the Cogolludo river, 40 miles from Madrid. The town contains a magnificent palace built by Philip V., also a large plate glass manufactory.

ÎLE-DE-FRANCE (ēl″dä-frängs″), one of the old provinces of France, having Paris as its capital, and now mostly comprised in the departments of Seine, Seine-et-Oise, Aisne, Seine-et-Marne, Somme, and Oise. In the middle of the 9th century it was made a dukedom. The 2d duke, Odo, commonly called Count of Paris, was crowned King of France in 888. Another, Hugh Capet, founded in 987 the Capetian dynasty. Ile-de-France was formerly the name of Mauritius.

ILETZK (il′etsk), a town in the Russian government of Orenburg, near the confluence of the Ilek with the Ural. Close by is the richest salt-bed in Russia.

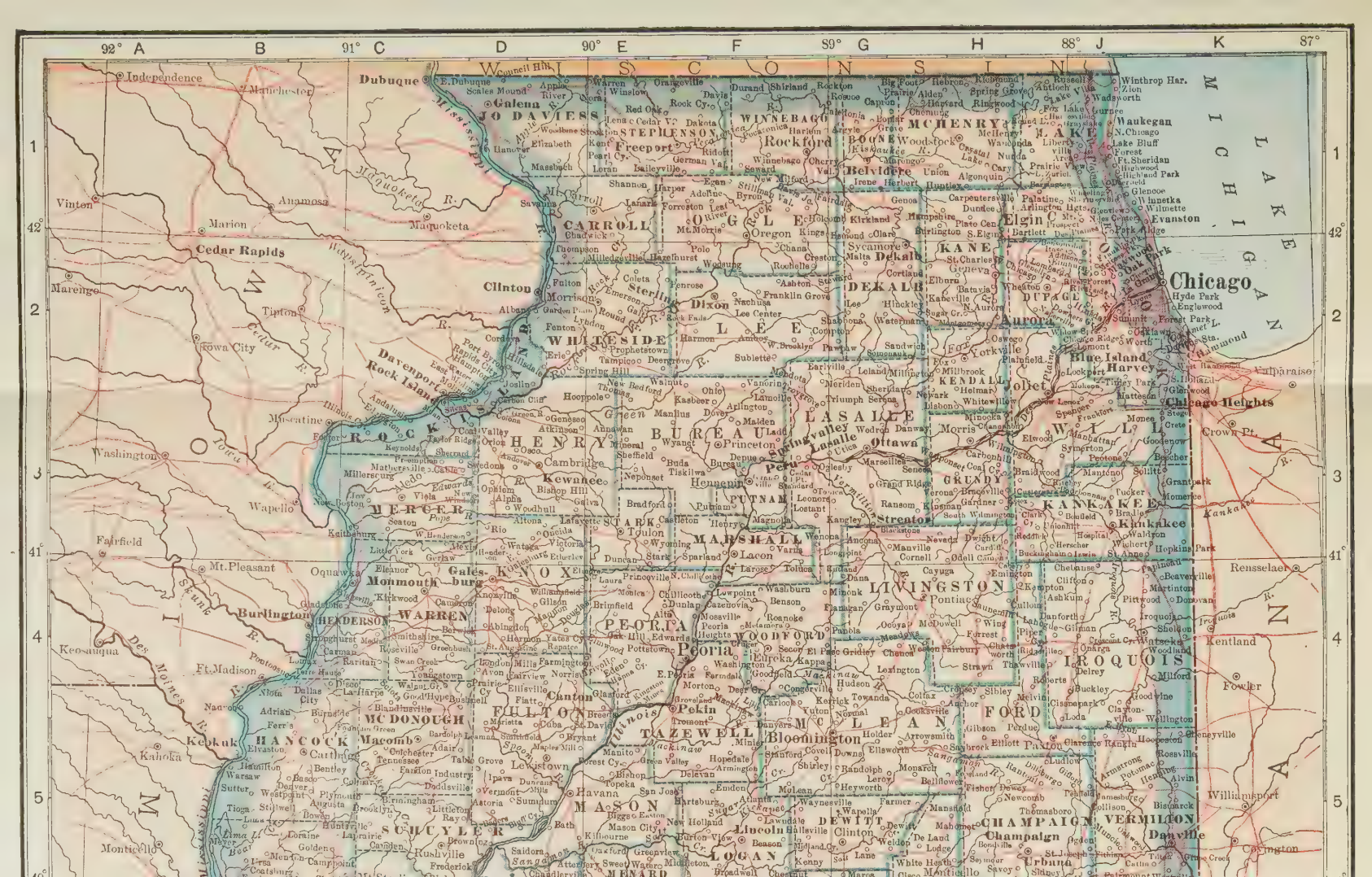
ILEUM, the portion of the small intestines communicating with the larger intestine. It is formed by one of the folds of the peritoneum. Sometimes there is a pouch or diverticulum from the main tube.

ILEUS, or ILIAC PASSION, a severe intestinal disease, characterized by violent griping pain, accompanied with retraction and spasms of the abdominal muscles, costiveness, and vomiting of fæcal matter. Among the most frequent causes of this disease are strangulated hernia, intussusception, or the retention of one part of the bowel within another, unnatural adhesions between adjacent folds of the intestines, inflammation, etc.

ILEX, a tree often named in the Latin classics, the evergreen oak or holm oak (*Quercus ilex*). It is a native of most parts of the S. of Europe and of the N. of Africa, often attaining large dimensions, as it sometimes does when planted in Great Britain. The bark is very astringent, and is employed for tanning hides in the countries to which the tree is indigenous. Its wood is very hard and heavy, tough, durable, and useful, particularly for axles, pulleys, screws, and whatever is to be subjected to much friction. In modern botany ilex is the generic name of the holly.

ILFORD, a district of Essex, England. It is on the Roding river. Its chief industry is the manufacturing of photographic materials. It has an insane asylum, a hospital, and other public buildings. Pop. about 80,000.

ILFOV, a department of Rumania, in the S.; bordered on the S. by the river Danube and Bulgaria, on the E. by Dobrudja, on the N. by Dembovitza, and on the W. by Vlashea. It is part of the territory of Wallachia, and is among the most cultivated of the Rumanian provinces. It has an extensive trade with the East, its commerce being carried into the Black Sea along the Danube. During the European War it was the theater of much fighting, following the German drive in 1916. The area of the department is 2,230 miles. The capital is Bucharest. Pop. about 700,000.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LAKE
Waukegan
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Blue Island
Harvey
Joliet
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Sterling
Rock Falls
Clinton
Independence
Manchester
Anamosa
Marion
Cedar Rapids
Marengo
Tipton
Iowa City
Vinton
Marquette
Davenport
Rock Island
Muscatine
Washington
Wapello
Fairfield
Mt. Pleasant
Oquawka
Monmouth
Galesburg
Knox
Warren
Henderson
Burlington
Keosauqua
Ft. Madison
Keokuk
Kahoka
Monticello
Henry
Bureau
Putnam
Marshall
Stark
Mercer
Kewanee
Cambridge
Princeton
Peoria
Woodford
Tazewell
Mason
Logan
Lincoln
Champaign
Ford
McLean
Bloomington
Pekin
Fulton
Canton
Lewistown
Ellisville
McDonough
Macomb
Hancock
Carthage
Warsaw
Quincy
Adams
Pike
Calhoun
Brown
Schuyler
Hancock
Sullivan
Monticello
Decatur
Shelby
Moultrie
Douglas
Edgar
Clark
Cumberland
Coles
Effingham
Fayette
Clay
Richland
Lawrence
Crawford
Jasper
Marion
Clinton
Washington
Jefferson
Wayne
Edwards
Wabash
White
Hamilton
Franklin
Williamson
Saline
Gallatin
Hardin
Pope
Johnson
Alexander
Union
Jackson
Perry
Randolph
Monroe
St. Clair
Madison
Bond
Clinton
Fayette
Montgomery
Macoupin
Jersey
Calhoun
Greene
Scott
Morgan
Cass
Menard
Sangamon
Christian
Shelby
Moultrie
Piatt
Macon
Logan
Mason
Tazewell
Woodford
Livingston
Ford
Iroquois
Kankakee
Will
Cook
Lake
Du Page
Kane
McHenry
Boone
Winnebago
Ogle
Lee
Whiteside
Carroll
Jo Daviess
Stephenson
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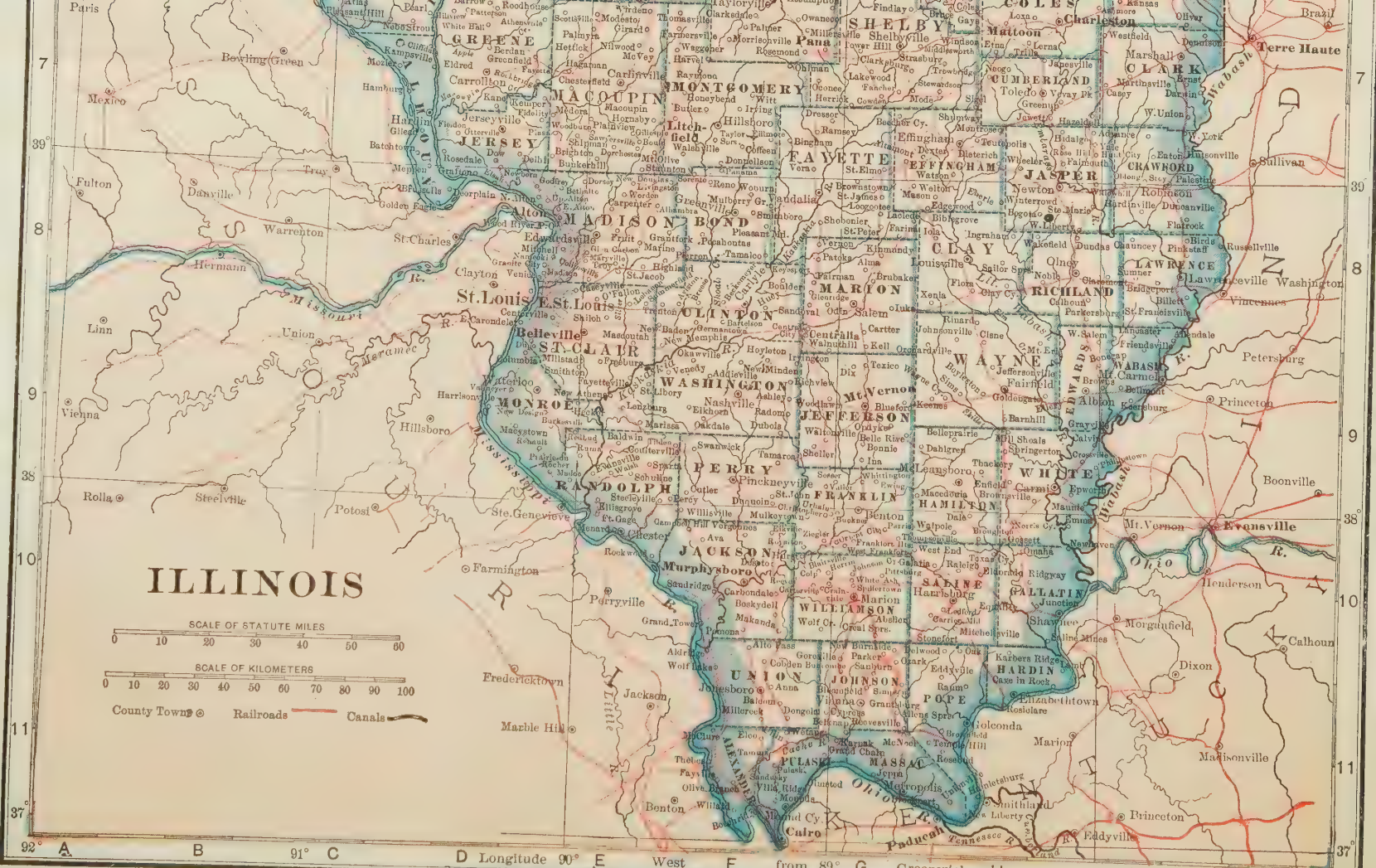
Mississippi R.
Illinois R.
Rock R.
Fox R.
Kankakee R.
Iroquois R.
Wabash R.
Ohio R.
Lake Michigan



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ILFRACOMBE, a watering place of England, finely situated on the picturesque rocky coast of North Devon, on a cove or inlet of the Bristol Channel. Ilfracombe was in the 14th century a port of some consequence.

ILI (il'ē), a river of central Asia, partly in Chinese territory, but mostly in Russian. It is formed in Chinese Kuldja by two streams, the Tekes and Kunges, rising in the Thian-shan Mountains, and flows W., falling into Lake Balkash by several mouths after a course of 800 or 900 miles, half of which is navigable.

ILIAD, a celebrated epic poem in the Greek language, consisting of 24 books. Its composition is generaly ascribed to Homer. It is, however, a matter of dispute as to whether the poem is a homogeneous whole, or a series of ballads or rhapsodies on different episodes in the Trojan War, united into a continuous poem. It is said that Pisistratus, tyrant of Athens, first collected and arranged the "Iliad" and "Odyssey." The chief subject of the poem is the wrath of Achilles, and the consequent troubles thence arising. The action is confined to the 10th and last year of the siege of Troy. See HOMER.

ILICIN (ī'lis-in), a bitter principle extracted from the leaves of the holly. It has been recommended as a febrifuge, in doses of from 6 to 20 grains.

ILION, a village in New York in Herkimer co. on the Mohawk river and Erie and Barge canals. It is also on the New York Central and Hudson River and the West Shore railroads. It is an important industrial center, having manufactories of firearms, typewriters, store fixtures, knit goods, etc. There is a library and a hospital. Pop. (1910) 6,588; (1920) 10,169.

ILISSUS (il-is'us), a rivulet of Greece, famous in the classical age, but now unimportant and often wholly dry.

ILITHYIA (il-ith-ī'yä), among the Greeks the goddess who assisted women in childbirth. In aftertimes she was almost identified with Artemis (Diana).

ILIUM, or **ILION**, a name of Troy, in Greece, which was founded by Ilus.

ILIYATS (il'ē-yats), a nomadic race of Persia, Khiva, and Turkestan. The name Iliyat is the plural of *iel* (eel), a tribe, equivalent to the Arabic *kabilah*. The Iliyats are mostly of Turkish, Arabic, and Kurdish descent, and form an important portion of the population of Persia and adjacent countries. They live in tents and are Mohammedans of the Sunni sect.

ILKESTON, a town of England in Derbyshire. There are important manufactures of hosiery, lace, and stoneware. In the neighborhood are coal and iron works. Pop. about 32,000.

ILLE-ET-VILAINE (ē-lā-vē-lān'), a maritime French department, formed out of the N. E. portion of the old province of Brittany; area, 2,596 square miles; pop. about 625,000, mostly of the Celtic race. The cider of this district is the best in France; the butter of Rennes, the capital, is celebrated; the horses of the department are noted for their endurance, and are in great request for the army; and bee keeping is prosecuted. Iron is mined; slates are quarried; and salt is extracted. St. Malo is the principal seaport.

ILLEGITIMACY, a state of being illegitimate; state of being born out of wedlock; the state of bastardy. A state of being not genuine, or of legitimate origin.

ILLICIUM (il-lis'ē-um), a genus of *Magnoliads*, tribe *Wintereæ*. The fruit and other parts of *Illicium anisatum* is used by the Chinese as a stomachic and carminative, and as a spice. The fruit yields by distillation an oil like that of anise, used chiefly in the manufacture of liquors. *I. floridanum* is also spicy. The fragrant seeds of *I. religiosum* are burnt by the Chinese in their temples.

ILLIMANI (il-yē-mä'nē), one of the loftiest peaks in the Bolivian Andes, fully 21,000 feet high, and covered with glaciers.

ILLINGTON, MARGARET, an American actress; born in Bloomington, Ill., in 1881. She was educated at Illinois Wesleyan University and at the Chicago Musical College. Her first appearance on the stage was in 1900. She played for several years as a member of Daniel Frohman's stock company in New York, and following this, acted as a star in many important productions. In 1916 and 1917 she was co-star with John Drew in "The Gay Lord Quex." In 1903 she married Daniel Frohman.

ILLINOIS, a confederacy of five tribes of North American Indians, comprising the Peoria, Kaskaskia, Cahokia, Tamaroa, and Michegamia. They formerly occupied Illinois and adjacent parts of Wisconsin, Iowa, and Missouri.

ILLINOIS, a State in the North Central Division of the North American Union; bounded by Indiana, Kentucky,

Missouri, Iowa, Wisconsin, and Lake Michigan; admitted to the Union, Dec. 3, 1818: number of counties, 102; capital, Springfield; area, 56,650 square miles; pop. (1890) 3,826,351; (1900) 4,821,550; (1910) 5,638,591; (1920) 6,485,280.

Topography.—The surface of the State is generally flat, rising in an inclined plane from a depression of 300 feet near Cairo, to an elevation of 820 feet in Jo Daviess county. A spur of the Ozark Mountains crosses the S. part of the State. The principal physical features of the State are the great prairies or natural meadows, from which Illinois derives its popular name, the "Prairie State." The river system of Illinois is the most extensive in the Union. The Mississippi forms its entire W. boundary, and its great E. tributary, the Ohio, with its affluents, the Illinois, Wabash, Kankakee, Des Plaines, Kaskaskia, Mackinaw, Sangamon, Vermilion, and their numerous tributaries, form a water system of over 280 streams. The Illinois river broadens out into an extensive basin, known as Lake Peoria in the central part of the State. This, with Lake Pishtaka in the extreme N. E., comprises the lake system of Illinois. There are numerous natural points of interest, among them being Starved Rock, a mass of sand and limestone rising abruptly to a height of 160 feet; Fountain Bluff, 6 miles in circumference and 300 feet high; and a large cave in Hardin county, on the Ohio river, formerly a noted retreat for river pirates.

Geology.—The N. part of the State shows Silurian origin, with Tertiary and Post-Tertiary formations in the S., and Devonian strata in the S. hills. Geological research seems to show that the Great Lakes were once connected with the Gulf through the channels of the Illinois and Mississippi rivers, the whole region being an immense lake. Fresh water shells have been found in the Post-Tertiary clays and sands on the lake shore and marine shells are found in the soil of the prairies. Along the Mississippi river are steep bluffs of lime and sandstone, called from their form, Castle Rocks.

Mineralogy.—Bituminous coal is found in a field 375 miles long by 200 miles broad, usually in the form of cannel coal, though some excellent smelting coal is also found. The coal production of the State in 1918 was 91,263,000 tons, an increase of about 5,000,000 tons over 1917. The production of pig iron in the State in 1918 was 3,409,876 tons valued at $105,415,030. The production of natural gas in 1917 was 4,439,016 M. cubic feet, valued at $479,072. The production of petroleum in 1917 was 15,776,850 barrels, valued at $31,358,069. Other important mineral products are cement, of which about 5,000,000 barrels are produced annually; coke; mineral waters; sand and gravel; and clay products. The total value of the mineral products in 1917 was $216,914,229.

Soil.—The soil is generally black, light, rich, and warm, and free from stones and pebbles, though in places it is mixed with a siliceous sand. It is exceedingly fertile. In some places the loam has a depth of 25 feet. The prairie lands consist of the original diluvial sediment, overlaid with decomposed vegetable matter. The "American Bottom," 5 miles in width and extending 90 miles along the Mississippi, has been cultivated ever since the first settlement, and its fertility still seems inexhaustible. The most abundant forest trees are the oak, black walnut, ash, hickory, sugar maple, locust, elm, linden, tulip, buckeye, poplar, beech, yellow pine, cypress, cedar, pecan, sycamore, cottonwood, and black birch.

Agriculture.—Illinois is one of the foremost States in agriculture. The fertility of its soil makes it especially adaptable for the raising of cereals, farm and garden vegetables, and fruit. Among its chief products are raspberries, strawberries, cherries, plums, peaches, grapes, apples, potatoes, tobacco, maple sugar, hops, flaxseed, and broomcorn. The production and value of the principal crops in 1919 were as follows: corn, 301,000,000 bushels, valued at $391,300,000; oats, 123,060,000 bushels, valued at $86,142,000; wheat, 65,675,000 bushels, valued at $137,918,000; hay, 4,810,000 tons, valued at $102,934,000; potatoes, 8,060,000 bushels, valued at $15,798,000.

Manufactures.—There were in 1914 18,388 manufacturing establishments in the State, employing 506,943 wage earners. The capital invested amounted to $1,943,826,000, and the wages paid to $304,910,000. The value of materials used was $1,384,184,000, and the value of the finished product was $2,247,323,000.

Banking.—On Oct. 31, 1919, there were 475 National banks in operation, having $79,415,000 capital, $25,069,286 in outstanding circulation, and $27,947,200 in United States bonds. There were also 905 State banks with $101,189,000 capital, and $67,135,000 surplus; 174 private banks, with $3,366,000 capital and $904,000 surplus. In the year ending Sept. 30, 1919, the exchanges at the United States clearing house, at Chicago,

were $28,223,025,000, an increase over the previous year of $2,581,154,000.

Education.—The school population of the State is about 1,700,000, and the enrollment in public schools about 1,200,000. There are about 35,000 teachers employed, of whom about 26,000 are women. About $25,000,000 is annually paid to teachers and the annual yearly salary of teachers is about $700 annually. A total of $40,000,000 is paid annually for education purposes. There are five normal schools, with 260 teachers, and about 12,000 pupils.

Among the most notable colleges are the University of Chicago, Northwestern University at Evanston, University of Illinois at Urbana, Lake Forest University at Lake Forest, Knox College at Galesburg, Augustana College at Rock Island, Northwestern College at Napierville, Illinois Wesleyan at Bloomington, James Millikin at Decatur, Loyola University at Chicago.

Churches.—The strongest denominations in the State are the Roman Catholics, Methodist Episcopal, Baptist, Lutheran, Synodical Conference, Disciples of Christ, Presbyterian, German Evangelical Synod, Congregational, Protestant Episcopal, and United Brethren.

Railroads.—The railway mileage in the State in 1919 was 13,413 miles of single main line track. There was practically no new construction during the year. The roads having the longest mileage are the Illinois Central, the Wabash, and the Cleveland, Cincinnati, Chicago and St. Louis.

Finances.—The receipts for the fiscal year 1919 amounted to $32,240,681, and the disbursements to $26,374,900. On Sept. 30, 1919, there was a balance in the treasury of $26,861,321. The State has a very small bonded debt amounting to about $17,500.

Charities and Corrections.—The most important charitable and correctional institutions are hospitals at Elgin, Kankakee, Jacksonville, Anna, Watertown, Peoria, Chicago, Chester, and Alton; school and colony at Lincoln; schools for the deaf and blind at Jacksonville; training school for girls at Geneva; training school for boys at St. Charles; industrial school for the blind, at Chicago. There are also other institutions for the care of the blind, deaf and the mentally defective. The State spent over $7,500,000 annually for the support of these institutions. There are about 260 benevolent institutions, hospitals, orphanages, homes and schools for deaf and blind in the State.

State Government.—The governor is elected for a term of four years and receives a salary of $12,000 per annum. Legislative sessions are held biennially and have no time limit. The Legislature has 51 members in the Senate and 153 in the House. There are 27 representatives in Congress. The State government in 1920 was Republican.

History.—The first white settlement in Illinois was the Jesuit mission at the Indian village Kaskaskia, founded by Marquette in 1673. In 1679 La Salle built Fort Crevecœur on the Illinois river near Lake Peoria, and in 1680 established a colony there. After the cession of Canada and the French possessions E. of the Mississippi to England in 1763, Illinois was considered part of Virginia, and in 1778 a military force from there seized Kaskaskia and obtained allegiance from the inhabitants. It was part of a county of Virginia till 1787, when it became part of the Northwest Territory, and in 1809 it became the Territory of Illinois. On Aug. 15, 1812, the garrison of Fort Chicago, and nearly all the settlers near by were massacred by the Indian allies of the British. Illinois was admitted to the Union in 1818 and in 1832 the Black Hawk War broke out. Several massacres occurred, but the Fox and Sac Indians were finally removed from the State. Hostility to the Mormons led to the murder, by a mob, of the founders of the sect, Hiram and Joseph Smith, in 1844, and the subsequent emigration of the Mormons from the State. In 1847 a new constitution was framed and became operative the same year. The present Constitution was ratified, July 2, 1870.

ILLINOIS COLLEGE, an institution for higher education, founded in 1829 at Jacksonville, Ill. In 1919 there were 26 members of the faculty and 439 students. The library contains about 15,000 volumes and the endowment amounts to about $400,000. President, C. H. Rammelkamp.

ILLINOIS RIVER, the largest river in Illinois; formed in Grundy county by the union of the Des Plaines and Kankakee rivers, and flowing a general W. and S. W. course, enters the Mississippi river at Grafton, between Jersey and Calhoun counties. During its course it receives several rivers of considerable size, and affords communication between important towns and villages, being navigable for steamboats for about 286 miles above its mouth.

ILLINOIS STATE NORMAL INSTITUTE, an institution for normal and higher education, founded at Normal, Ill., in 1857. In 1919 there were 70 mem-

bers of the faculty and 2,096 students. The library contains about 30,000 volumes. President, David Felmley.

ILLINOIS, UNIVERSITY OF, a coeducational non-sectarian institution in Urbana, Ill.; founded in 1867; reported at the close of 1919: Professors and instructors, 672; students, 8,052; president, David Kinley.

ILLINOIS WESLEYAN UNIVERSITY, a coeducational institution in Bloomington, Ill.; founded in 1850 under the auspices of the Methodist Episcopal Church; reported at the close 1919: Professors and instructors, 40; students, 590; president, Theodore Kemb.

ILLITERACY, inability to read and write any language. In the United States the census officers consider those who cannot write, but can read, illiterate. In the United States inquiry is made of all persons as to their literacy and those persons above 10 years of age who cannot write are considered illiterate. The European countries differ in their methods of securing their statistics in this matter and the age limit is not always 10 years. Of the European countries, Germany, with but one-half of one per cent. of her population illiterates, heads the list, closely followed by Switzerland. Illiteracy is the greatest in southern and southeastern Europe. In Spain, Portugal, Servia, and Rumania a considerable per cent. of the population, in the case of the last named country nearly 90 per cent. of the population, is illiterate. While comparison between nations is on an insecure basis due to the different methods of collecting statistics used in the various countries, it is clear that those nations which send the greatest number of immigrants to this country are those with a high proportion of illiterates.

According to the census of 1910 the illiterates in the United States numbered 5,516,163, or 7.7 per cent. of the population. The draft of 1917–1918 revealed a slightly higher percentage, but in the main confirmed the census figures. The greatest percentage of illiteracy is reached among the negroes, who make up 40 per cent. of all the illiterates of the nation; 30 per cent. of the illiterate group are foreign-born whites, 28 per cent. are native whites, and two per cent. of them are Chinese and Indians. As might be expected, the rural population is more illiterate than the city, because of the relative scarcity of schools.

Of the adult male population there are 2,273,603 illiterates, those cities having the greatest percentage of illiterate males over 21 being Fall River with 15.6, Birmingham with 10.4, Scranton 8.9, Nashville 8.8, Atlanta 8.6, and Richmond 8.2. These cities have this relatively large percentage because of large foreign or negro populations. The five largest cities in the United States compare in the percentage of illiterates above 21 years of age thus: New York 6.4, Chicago 5.1, Philadelphia 4.7, Boston 4.5, St. Louis 4.1.

The States having the lowest percentage of illiteracy are Iowa, Nebraska, Oregon and Washington; in all these the percentage is under 2 per cent. The highest percentage of illiteracy is reached in the Southern States with their large negro population, and in those States along the Mexican border: Louisiana (29.0), South Carolina (25.7), Alabama (22.9), Mississippi (22.4), Arizona (20.9), New Mexico (20.2).

ILLUMINATI (il-yū-mē-nā′tī or il-öm-ē-nä′-tē), a Spanish sect, known vernacularly as Alumbrados. Their founders were Catherine de Jesus, a Carmelite nun, and John de Willelpando, a native of Teneriffe. They rejected the sacraments, and held that by mental prayer they might attain such perfection as to dispense with good works, and that they might commit any crime without sin. Ignatius Loyola, while a student at Salamanca (1527), was tried by an ecclesiastical commission for sympathy with the views of this sect, but declared innocent. Also an obscure sect of French Familists, which arose in Picardy in 1634.

The Rosicrucians were so called, but generally by this title are designated the members of a society formed at Ingolstadt, in 1776, by Adam Weishaupt, Professor of Canon Law, and an ex-Jesuit. It had some resemblance to, and received substantial support from, Freemasonry. Its objects were religious and political emancipation, its ideal form of government republican, and its religion deistic. The order was suppressed by edict, March 2, 1785, and Weishaupt was degraded and banished.

ILLUSIONS, conditions usually distinguished as having some basis in outward physical facts, from delusions, which are purely subjective hallucinations, with no foundation save perverted imagination, or otherwise disordered faculties. Optical illusions are exemplified by the appearances connected with mirage.

ILLYRIA, ILLYRIS, or ILLYRICUM, a name anciently applied to all the countries on the east coast of the Adriatic. In the 4th century B. C., the

n. portions of Illyria were visited by the Gauls, who expelled the natives, and drove them to the S. Philip II., King of Macedon, waged war with the Illyrians 359 B. C.; and the Romans sent an army against them, and compelled them to sue for peace, 232 B. C. The second Illyrian War commenced 229 B. C., and also terminated in favor of the Romans. The Dalmatæ revolted from the Illyrians 180 B. C., and formed the independent state of Dalmatia, and the remaining country was reduced into a Roman province by L. Anicius 168 B. C. It became an imperial province 11 B. C. Dalmatia, Carniola, and some neighboring countries, received the name of Illyrian Provinces by a decree issued by Napoleon I., Oct. 14, 1809. In 1815, these provinces were united as a kingdom to the Austrian empire, and some alterations were made in its boundaries, especially by the restoration to Hungary of what had formerly belonged to it, and the annexation of the whole of Carinthia instead. The kingdom was divided into the two governments of Laibach and Trieste, Laibach being the capital; which arrangement existed till 1849, when it was subdivided, for administrative purposes, into the duchies of Carinthia and Carniola, and into the coast district, containing the territory of Trieste, and the counties of Görz, Gradiska, and Istria. By the terms of the Treaty of St. Germain Carinthia remained to Austria, Carniola and Istria were given to Jugo-Slavia, while Trieste, Görz and Gradiska, now known as Gorizia and Gradisca, were assigned to Italy.

ILMEN, formerly Moysk, a lake in the Russian government of Novgorod, with an area of 354 square miles.

ILMENITE, or **MENACCANITE**, $FeTiO_3$ or $(FeTi)_2O_4$, a mineral found in the Urals, in Norway, France, the Adirondacks, in Connecticut, Massachusetts and Canada. Dark brown to black in color, with a semi-metallic luster, and a lustrous conchoidal fracture. Occurs in isolated grains in basic igneous rocks, and as deposits in the beds of streams. Contains approximately 37 per cent. iron and 32 per cent. titanium.

ILOCANO, the designation given to the inhabitants of Ilocos Norte, Ilocos Sur, and the Union districts of Luzon, Philippines. They are nearly all Christians, and while they have retained many of the elements of their old pagan culture, they became habituated at an early date to the civilization which the Spanish invaders brought with them. They are skillful in agriculture, and produce rice, cotton, chocolate, corn, tobacco and sugar, and their industries include mining, cloth weaving, and stock raising. Their contiguity to the coast has given them a facility in commerce much superior to that noted in the interior races. They appear to be kindred to the less advanced people called Tinguian, resembling them both in speech and physique. Their number is about 850,000.

ILOILO (ē″lō-ē′lō), the capital of the island of Panay in the Philippine group, and second only in importance to Manila, from which it is 350 miles distant. Early in 1899 it was taken possession of by the insurgents. After the treaty of peace between Spain and the United States was ratified, Feb. 6, 1899, General Miller was instructed by General Otis to communicate with the rebel governor and make conditions of surrender. This was done Feb. 11, and the insurgents were given till the evening of that day to evacuate the city. Their only reply was to fire upon the gunboat "Petrel," conveying General Miller. The "Petrel" and her consort, the "Baltimore," then bombarded the town and in a few hours the insurgents set fire to the place and fled. Iloilo has a fine harbor, and is surrounded by extensive sugar plantations. Pop. about 50,000.

ILONGOT, a designation given to a primitive people kindred to the Malayans, who dwell in the valley of the Cagayan river, in northern Luzon, Philippine Islands. They show a negroid strain and keep themselves in the mountainous interior, living largely in solitary and scattered huts, with even few villages among them. They are the least civilized and least known of the Philippine tribes, are much given to war and head hunting, and life is maintained by such simple occupations as the cultivation of rice, millet and potatoes, hunting and fishing. The tribe numbers about 3,000.

ILORI (il′or-ē), or **ILLORIN**, capital of a Yoruba state in western Africa, and a great commercial center. The people, about 70,000 in number, consist of Yorubas, Haussa, Fulah, and others, and make cloth, arms, and leather. The state is now practically a province of Sokoto; and is within the territory of the British Royal Niger Company. The religion is Mohammedanism, with strong traces of heathenism. See NIGERIA.

ILUS (il′us or ī′lus), a King of Troy; son of Tros by Callirhoe. He extended and embellished his city, called Ilium, and also Troy, after his father Tros. Jupiter gave him the Palladium, a celebrated statue of Minerva, and promised

that so long as it remained in Troy, the city would remain impregnable. When the temple of Minerva was in flames, Ilus rushed into the middle of the fire to save the Palladium. For this action he was deprived of his sight by the goddess; but subsequently recovered it. He is said to have reigned between 1402 and 1347 B. C.

IMABENZILE (im-ä-ben'zil), in chemistry, $C_{14}H_{11}NO$, a white, crystalline, inodorous powder, obtained, together with benzilam and benzilimide, by the action of dry ammoniacal gas on benzile dissolved in hot absolute alcohol. It is insoluble in water, in boiling alcohol, and in ether, but dissolves readily in an alcoholic solution of potash. The crystals melt at 140°, but on cooling they solidify without recrystallizing.

IMAGE WORSHIP, the worship of images, or worship with their aid. Image worship is sometimes used as a synonym for idolatry, sometimes as meaning the worship of images as symbols, or, as in Roman Catholic theology, *cultus sacrarum imaginum* (veneration of holy images). Sometimes it refers particularly to the use of icons in the Eastern Church. According to Tertullian, Christians were known as "worshipers of the cross" and the image of the Good Shepherd was on the chalices. The tombs of the Christians in the Roman catacombs, many of which are of a date anterior to Constantine, frequently have graven upon them representations of the Dove, of the Cross, of the symbolical Fish, of Moses striking the rock, of Jonah, of Daniel in the lions' den, of the apostles Peter and Paul, and above all, of the Good Shepherd. It was only after the establishment of Christianity under Constantine that statues and pictures of the Saviour, of the Virgin Mary, and the Saints were commonly introduced in churches. It was usual not only to keep lights and burn incense before the images, but to kiss them reverently, and to kneel down and pray before them. This use of images by Christians was alleged as an obstacle to the conversion of the Jews and as one of the causes of the progress of Mohammedanism; and the devotion described above provoked the reaction of Iconoclasm. See ICONOCLAST. In the second Council of Nice (787) the doctrine as to veneration of images was carefully laid down. A distinction was drawn between the supreme worship of adoration, which is called *latreia*, and the inferior worship of honor or reverence, called *douleia*. The second Council of Nice declared that the worship to be paid to images is not the supreme worship of *latreia*, but only the inferior worship of *douleia;* and also that it is not absolute, and is not rendered to the images themselves, but relative—*i. e.*, only addressed through them, or by occasion of them, to the original which they represent.

At the Reformation the protesting party generally rejected the use of images as an unscriptural novelty, and stigmatized their employment in worship as superstitious and even idolatrous. The Zwinglian, and subsequently the Calvinistic Churches, entirely repudiated all use of images for the purposes of worship. Luther, on the contrary, while he condemned the worship of images, regarded the simple use of them even in the church for the purpose of instruction and as incentives to faith, and to devotion as one of those indifferent things which may be permitted. In the modern Anglican Church the practice is still a subject of controversy. In the Presbyterian Church and in all the other Protestant communions images are entirely unknown, though figures of patron saints and eminent Churchmen have occasionally been set up.

In the Greek Orthodox Church the images (icons) are paintings, bas-reliefs, or mosaics, often richly adorned with jewels.

The Council of Trent (1545-63) renews the Nicene distinction between absolute and relative worship; the latter of which alone it sanctions or permits; and it contends for the great advantage, especially in the case of rude and unlearned people, to be drawn from the use of pictures and statues in the churches. In many foreign churches, especially in Italy, in southern Germany, and in France, are to be found images which are popularly reputed as especially sacred, and to which, or to prayers offered before which, miraculous effects are ascribed.

IMAGINARY EXPRESSION, or QUANTITY, an algebraic expression or symbol having no assignable arithmetical or numerical meaning or interpretation; the even root of a negative quantity.

IMAGINATION, a term used in various significations. Addison says that "the pleasures of imagination are such as arise from visible objects, since it is the sense of sight that furnishes the imagination with its ideas." Others, however, employ the word in a much wider signification: some, as synonymous with fancy; others, as denoting generally the faculty of the human mind by which thoughts or ideas are produced at will. Philosophers have divided imagination into two kinds—the reproductive and the productive. By the former, they mean

imagination considered simply as re-exhibiting or representing the objects presented by perception, that is, exhibiting them without addition or retrenchment, or any change in the relations which they reciprocally held when first made known to us through sense. The productive or creative imagination is that which is usually signified by the term imagination or fancy in ordinary language. There are different kinds of imagination, as there are different kinds of intellectual activity. There is the imagination of abstraction, the imagination of wit, the imagination of judgment, the imagination of reason, the imagination of feeling, and the imagination of the passions.

IMAUS (i-mā'us), a name applied by the ancients sometimes to the Hindu Kush and the W. part of the Himalayan range, and sometimes in a vague way to a range in Central Asia (supposed to be the Altaian Mountains), which they believed to divide the vast region to which they gave the name of Scythia, into two parts.

IMBECILITY, the quality or state of being imbecile; weakness, mentally or physically.

IMBERT, BARTHELÉMI (*ang*-bar'), a French poet; born in Nîmes, in 1747. He attained celebrity with "The Judgment of Paris," a specimen of delicately wrought and musical versification. He also wrote a "Book of Fables." He died Aug. 23, 1790.

IMBERT, DE SAINT-AMAND, ARTHUR (a*ng*-bār' duh sa*ng*t-ä-mä*ng*), a French biographer and historian; born in Paris, Nov. 22, 1834. His career was a diplomatic and official one till he began a study of the lives of the women of the old French courts, of the First Empire, and of the Restoration. His "Women of Versailles" and "Women of the Tuileries" are fine examples of realistic biography. His studies of the Napoleonic royalties sustain the reputation established by the earlier works. He died in 1900.

IMBROS, an island of the Ægean Sea; about 14 miles N. E. of Lemnos and the same distance W. of the mouth of the Dardanelles; area 98 square miles. The island is mountainous, its highest summit attaining 1,959 feet above sea-level. Goats and bees are kept. The inhabitants cultivate the soil and carry on fishing. The chief village, Kastron, is on the N. coast, and occupies the site of the ancient town of Imbros. It is the seat of a metropolitan of the Greek Church. During the World War Imbros was one of the Turkish islands in the archipelago seized by Greece. Most of these Greece has kept, but by a decision of the Supreme Council Imbros is to be handed back to Turkey.

IMITATIO CHRISTI, a famous book highly prized by devout Christians of all confessions, and translated into more languages than any book except the Bible. The question of its authorship has given rise to a great controversy. It was formerly attributed unhesitatingly to Thomas à Kempis, and the best authorities still regard it as his work.

IMITATION, in music, the repetition of a short subject by another part. The subject proposed is sometimes called the antecedent, and the passage which afterward imitates it the consequent. Imitation by diminution is when the consequent is in notes half the length of those of the antecedent. Imitation by inversion is when the intervals of the antecedent are inverted in order to form the consequent. Imitation is said to be convertible when antecedent and consequent are interchangeable. If strict imitation be continued for any length of time, it is said to be canonical.

IMMACULATE CONCEPTION, a name applied to the dogma defined by Pope Pius IX., on Dec. 8, 1854, that the immaculate conception of Mary is an article of divine faith. According to the dogma, in her active conception, or generation, there was nothing miraculous; but in the passive conception, or infusion of a rational soul, she was sanctified and preserved from the taint of original sin by the foreseen merits of Christ.

IMMANENCE, the notion that the intelligent and creative principle of the universe pervades the universe itself, a fundamental conception of Pantheism.

IMMANUEL (im-man ū-el), the name which was to be given to a child who, it was prophesied by Isaiah, was to be born of *haalmah, i. e.*, the virgin. The prophecy is applied to the miraculous birth of Jesus.

IMMATERIALISM, a term sometimes so widely taken as to be a synonym for Idealism or Phenomenalism; more usually limited to the doctrine of George Berkeley, Bishop of Cloyne (1684-1753). Prof. A. C. Fraser reduces this system to three principles: The negation of matter, as signifying an unperceiving and unperceived substance proper, of the Ego; and, as cause proper, of a reasonable will; The affirmation of matter, as consisting of the ideas, objects, or perceptions of sense; of material sub-

stances usually called sensible things; and of material causes or uniform antecedents in the order of sensible changes.

IMMERMANN, KARL LEBERECHT (im'mer-män), a German poet, dramatist, and romancer; born in Madgeburg, April 24, 1796. A university course and the campaign of Waterloo supplied his early experiences. "The Princes of Syracuse," "The Eye of Love," and "Ghismonda" are his best plays. He lives in the brilliant and original "Epigoni." "Münchhausen," his lightest fancy, is well known. It must not be confused with "Baron Münchhausen." He died in Düsseldorf, Aug. 25, 1840.

IMMERSION, in astronomy, the disappearance of a celestial body by passing behind or into the shadow of another; it is opposed to emersion. The occultation of a star is immersion of the first kind; the eclipse of a satellite, immersion of the second kind.

IMMIGRATION. For ages there has been a tendency on the part of the world population to move westward. After the population of a certain country rises above a certain density, there is always a certain portion of the people who are ready to set out to seek new homes. This percentage is always the most energetic and adventurous, possessed of that vitality which translates discontent into action.

Of such is constituted the population of North America, and especially of the United States. In the very early colonial days the immigrants were usually refugees from religious persecution, who came to the new country for freedom to hold their own beliefs. Among these were not only the English-speaking peoples, but French, Swedish, German and other northern nationalities. The Germans were especially numerous during the fifties of last century, for after the revolutionary disturbances in Germany in 1848 thousands of Germans were obliged to flee.

This was the character, racially speaking, of the immigration to this country until about 1900. Their motive for coming was largely economic; to acquire more land. Most of these immigrants were of the peasant class, and the vast tracts of unsettled land in this country attracted them.

But during the last ten years of last century practically all the desirable land in the country had been appropriated. The hardy stock of the northern countries of Europe was no longer attracted. Immigration from those countries fell off.

By this time our industries were developing, and these, with their comparatively high wages, began to attract a new class of immigrants. Manufacturers sent agents abroad to encourage or even to contract for the coming over of large numbers of workers who were willing to work at the lowest of wages. These were to be found in southern Europe, especially in Italy, for here the people had a very low standard of living. Eventually this stimulation of immigration by manufacturers seeking cheap labor was stopped by legislation, but the stream had been started, and continued. In 1914 the chief elements coming over were Italians (270,414), Poles (122,657), and Hebrews (138,051). In that year there were 15,000,000 foreign born persons in the United States. In the big industrial centers, like Pittburgh, Buffalo, Detroit, Cincinnati, the percentage of foreign born in the population averaged as high as 75 per cent.

The effect of the war on this stream of immigration is shown by comparing the following figures, representing the numbers of immigrants during the war year, with the average of 1,200,000 a year before the war:

1915.....326,700	1918.....110,618
1916.....298,826	1919.....141,132
1917.....295,403	

Nor has this been all clear gain, as illustrated by the fact that in 1919, while 141,131 arrived, 123,522 foreign born persons departed for their native countries. In 1921 measures were introduced into both houses of Congress to restrict or regulate immigration. It was alleged that great numbers of persons in Central Europe were eager to emigrate to the United States when conditions permitted.

IMMOLATION, a ceremony used among the ancient Romans with regard to their sacrifices. It consisted in throwing frankincense, wine, and a species of cake, on the head of the victim, before it was sacrificed.

IMMORTALITY, exemption from death; the state of everlasting life. The dogma of the immortality of the soul is very ancient. It is connected with almost all religions, though under an infinite variety of conceptions. By the immortality of the soul we understand the endless continuation of our personality, our consciousness, and will. There are so many reasons to render immortality probable that with most nations the belief is as clear and firm as the belief in a god; in fact the two dogmas are intimately connected in the minds of most men. The hope of immortality

must be considered a religious conviction. Among rude peoples the life after death is usually regarded as a state of being not essentially different from the present—one in which the hunter will renew his chase, and his corporeal senses shall have their accustomed gratifications. Among the ancient Greeks and Romans the spirits of the dead were believed to live in the other world as a sort of shadows, and the life after death was also considered as a shadow of the present.

IMMORTELLES, a name for flowers, also known as everlasting flowers, and often made into wreaths for adorning graves.

IMMUNITY, in medicine the name given to a condition of the living body in which it is safe from the attacks of particular infectious germs, or certan poisons. Although the phenomena of immunity occur in cases of several vegetable and animal poisons (ricin, and snake venom for instances) not associated with disease, and are, hence, not strictly limited to the infectious diseases, they are of chief prophylactic and therapeutic interest in connection with the latter group of maladies. In a region where yellow fever abounds, certain individuals remain healthy, while their neighbors fall victims to the fever. These persons are spoken of as immunes. Their immunity may be due to a natural insusceptibility, or may have resulted from a preceding attack of yellow fever. One attack of many of the infectious diseases confers immunity from any further attacks by the same germ. This fact, long ago noted by the medical practitioner (and utilized for the prevention of smallpox in China several hundred years ago), is now being applied in prevention and curative work in the case of many common infectious diseases—typhoid fever, cholera, plague, cerebrospinal meningitis, etc. The immunity conferred upon person by an attack of disease is called *active;* that resulting from an artificial treatment with vaccines or sera, *passive.* The remedies used in producing artificial immunity are called *vaccines, antitoxins* and *toxins.* Vaccines usually consist of living or dead bacteria or their poisons (toxins); sometimes the living organisms are weakened or attenuated by heat, growth on special culture media, passage through other animals, etc., before use in the human body. The injection of vaccines, in small, frequently repeated doses, stimulates the normal protective agencies of the body. If the special disease germs, for which the vaccine is intended, are present in the body, in other words if the man already has the disease, the vaccine serves as an aid to the regular body forces, in raising a defensive army. If the disease is not present, the vaccine builds up a condition of immunity, so that an attack by the germ, if it occur at a later period, can be warded off. Vaccines have been more successful as preventives than as cures. The immunity produced may be permanent and lasting or merely temporary, a few weeks or months. Antitoxins are substances which act as antidotes to the toxins produced by disease germs. They are commonly manufactured by repeatedly injecting in an animal (horse, goat, dog, etc.), with increasingly virulent doses of the organism or its poisons against which an antitoxin is desired. The animal's blood finally becomes highly resistant to this particular organism, and it can withstand without harm many times the dose of germs fatal to a similar animal not so artificially immunized. A portion of the blood of the immunized animal is drawn, and the serum obtained from this constitutes the essential elements of the commercial antitoxin.

IMPASTO, in painting, a term used to express the thickness of the layer or body of pigment applied by the painter to his canvas. According to the method of handling exercised by different artists, this impasto is thick or thin. Rembrandt, Salvator Rosa, and others used a thick impasto; Raphæl, Guido, and others, an impasto so thin that threads of the canvas and the crayon outline may be seen through it.

IMPATIENS, a genus of *Balsaminaceæ*, with the calyx and corolla so abnormal that it is difficult to discriminate the several parts. About 135 species are known, nearly all from the Himalayas and other Indian mountains. The distilled water of the yellow balsam, taken in large quantities, is said to bring on diabetes.

IMPEACHMENT, the act of accusing, or charging with a crime or misdemeanor; the arraignment of a minister of state for maladministration or treason. In England impeachments are made in the House of Commons, and tried by the House of Lords.

The Constitution of the United States provides that the House of Representatives shall have the sole power of impeachment; and that the Senate shall have the sole power to try all impeachments. Section 4 of Article II. provides that the President and Vice-President and all civil officers of the United States

shall be removed from office on impeachment for and conviction of treason, bribery, or other high crimes or misdemeanors.

The Blount case was the first. William Blount, United States Senator from Tennessee, was charged in 1797 with conspiring with British officers to steal part of Louisiana from Spain for England's benefit. The House prepared articles of impeachment. The Senate expelled him, after putting him under bonds for trial.

Judge John Pickering, of the Federal District Court for New Hampshire, was impeached in 1803 for drunkenness and profanity on the bench. The defense was insanity. On trial before the Senate, Pickering was convicted by a party vote, and removed from his office.

In 1804, Samuel Chase of Maryland, a justice of the Supreme Court of the United States and one of the signers of the Declaration of Independence, was charged with improper conduct on the bench. The impeachment proceedings, instigated and managed by John Randolph of Virginia, were political in their origin and animus. Judge Chase was acquitted through the failure of the prosecution to obtain a two-thirds vote against him in the Senate, on any one of the eight articles of impeachment. He resumed his seat on the beach, and held it as long as he lived.

About a quarter of a century later, James H. Peck, a Federal district judge in Missouri, was impeached for oppressive treatment of an attorney. The case was of no importance; the judge was acquitted.

Thirty years afterward, at the beginning of the Civil War, Judge West H. Humphreys of the Federal District Court of Tennessee, joined the Confederacy and accepted judicial office under it, without taking the trouble to send his resignation to Washington. He was impeached, mainly in order to vacate the office, and convicted on June 26, 1862.

Andrew Johnson was impeached on March 4, 1868, the 11 articles charging the President in various forms with violation of the Tenure of Office act, with violation of the Constitution, with conspiracy to prevent the execution of the Tenure of Office act, etc. No vote was taken except on the three strongest articles and impeachment failed by a single vote.

The seventh Federal impeachment was that of William W. Belknap, Grant's Secretary of War. He was justly charged in 1876 with corruption in office, and the House voted unanimously to impeach him. He resigned hastily a few hours before the passage of the impeachment resolution. The eighth impeachment was that of Charles Swayne, Judge of the U. S. District Court in Florida. He was impeached for misconduct in office and was tried from Feb. 6 to Feb. 27, 1905. Both impeachment proceedings failed by the lack of a two-thirds majority in the Senate for conviction.

In 1913 William Sulzer, Governor of New York, was impeached for filing a false statement of receipts and expenditures during his campaign. He was found guilty of filing a false statement but exonerated from the charge of perjury, and removed from office. Political animosity brought about the trial. In the same year Robert W. Archbald, United States Circuit Judge of Pennsylvania, was impeached and found guilty of using his office for his personal profit.

IMPENETRABILITY, one of the essential properties of matter, implies that no two bodies can at the same time occupy the same space. If a nail be driven into a piece of wood, it does not, properly speaking, penetrate the wood, for the fibers are driven aside before the nail can enter. If a vessel be filled with fluid, and a solid body be then placed in it, as much water will run over as is equal in bulk to the solid body, in this way making room for it.

IMPERATOR (im-per-ā'tor), a title originally bestowed upon a victorious leader on the field of battle by his soldiers; toward the end of the commonwealth it was conferred by the Senate. Augustus and his successors constantly assumed this title, and it became the peculiar appellation of supreme power. Still later it became equivalent to the modern emperor. In zoölogy, a genus of gasteropodous mollusks, family *Turbinidæ*. About 20 species are known from South Africa, India, Australia, and New Zealand.

IMPERATORIN (im-per-ä-tor'in), $C_{12}H_{12}O_3$, peucedanin, a neutral substance destitute of taste and smell, obtained from the root of the masterwort by digesting it in boiling alcohol and purifying, by means of ether, from a brown resinous body with which it is contaminated.

IMPERIAL, pertaining to an emperor or empire; thus, an imperial crown is such as is worn by the German emperor; the Imperial Parliament is that of the United Kingdom. A size of paper, measuring 30 inches by 22, is also called imperial.

IMPERIAL CITY, a designation of Rome, for ages the mistress of the world.

IMPERIAL INSTITUTE. The Imperial Institute of the United Kingdom, the Colonies, and India, designed to commemorate the jubilee of Queen Victoria (1887), aims at comprising complete collections of the products of the various parts of the British empire, a commercial intelligence department for the promotion of trade and industry, and a great school of modern Oriental languages (opened in 1890).

IMPERIAL SERVICE ORDER, THE, a British order, organized in 1902 by King Edward VII, membership being confined to officials under the British crown in the British Isles, colonies, and dependencies. The head of the order is the reigning sovereign, and the members are called companions, the number of whom is not allowed to exceed 450. A condition of entry is a continuous service of 25 years, though this is reduced to a minimum of 16 years in the cases of parts of the world unfavorable to the health of Europeans. A majority of the members consist of those engaged in service in Great Britain.

IMPERIALISM, in its original, and, perhaps, its widest sense, was expressed in the great designs of Charlemagne. Regarded thus, it amounts to a scheme of undisputed sway over an extensive area of unbroken territory—autocracy on a grand scale. In that sense we find imperialism in the traditional policy of the czars of Russia—a policy which is supposed to imply continuous expansion to the E. In connection with the British empire, the word imperialism may, however, be used as combining the interests of all the members of the group—the mother-country, the colonies and dependencies—as distinguished from purely national, colonial, or local concerns.

In the United States "imperialism" is used to refer to the policy of "national expansion." The opponents of expansion made the constitutional right of the United States to establish a government over territory acquired by conquest or purchase, a question in the political campaign of 1900; the Democrats holding such government unconstitutional; Republicans affirming that the responsibility resultant from the defeat of Spain, and the ensuing failure of Spanish government, must be met, and a stable government established. On Dec. 2, 1901, the Supreme Court of the United States handed down a decision on the constitutionality of the policy of expansion. The broad principles settled by the decision are succinctly stated to be these: (1) The Constitution does not follow the flag till it is planted on new territory by special act of Congress. (2) The extension of the sovereignty of the United States to new territory carries with it all the constitutional guarantees of the enjoyment of liberty, the right to property and the protection of the United States to the people thus affected in securing justice and maintaining public order and promoting peaceful progress. (3) The islands acquired from Spain by the treaty of Paris are "property of the United States" in the strict sense in which that term is used in the Constitution, and, this being the case, Congress can dispose of these islands in any way which it may believe to be conducive to the highest interests of the people of the United States and of these islands.

IMPOST, a tax, a toll, a tribute, a duty; a custom or duty levied upon goods imported. In architecture, the point where an arch rests on a wall or column; the upper member of a pillar, column, or entablature, upon which an arch or superstructure rests; a plat band; the upper stone of a pier or abutment, upon which the springing or bottom stone of an arch is imposed; a "continuous impost" is one in which the arch moldings are carried down the pier without interruption, and without having a capital or distinction of any kind at the spring of the arch; a "discontinuous impost," one in which the arch moldings abut and are stopped on the pier; a "shafted impost," one in which the arch moldings spring from a capital, and are different from those of the pier; and a "banded impost," one in which the pier and arch have the same moldings.

IMPRESSIONISM, the system in art or literature which, avoiding elaboration, seeks to depict scenes in nature as they are first vividly impressed on the mind of the artist or writer.

IMPRESSMENT, the forcible levying of seamen for service in the navy.

IMPRIMATUR, a license which, in countries subjected to the censorship of the press, must be granted by a public functionary appointed for the purpose before any book can be printed.

IMPRISONMENT, the restraint of one's liberty under the custody, charge, or keeping of another. No man can be imprisoned except by the law of the land, and no man is to be imprisoned except as the law directs, either by command

and order of a court of record, or by lawful warrant.

IMPROPRIATION, in the English Church, the transfer of a benefice to the possession of a layman, the annexing of benefices to ecclesiastical corporations being called "appropriation," though they are sometimes identical.

IMPROVISATORE (im-prō-vēz-ä-tōr-ä), one who composes and recites or sings extemporaneous or impromptu verses upon any given subject without premeditation. The Italians particularly excel in this species of composition, owing, no doubt, in great measure, to the richness and flexibility of their language.

INA, or INE (ē'nä), a King of the West Saxons in the 7th and 8th centuries. He succeeded Ceadwalla about 689, and after having obtained advantages over the people of Kent in 694 he turned his arms against the Britons, from whom he wrested Somersetshire and other parts of the west of England. He then made war on the Mercians; but the contest was terminated, without much advantage to either party, by a bloody battle in 715. He resigned his crown and went as a pilgrim to Rome (728), where he passed the rest of his days in devotion. He was one of the principal legislators of the Anglo-Saxons. His laws are the oldest known to us among the Anglo-Saxon kings, except those of the kings of Kent, and served as the foundation of the code formed by Alfred the Great.

INACHUS (in'ä-kus), in Greek mythology, a river god. He was father of Io and hence ancestor of many ancient royal families.

INACTOSE, (in-ak'tōs), a true sugar found in the leaves of certain plants previous to flowering. Some of the tobacco family contain as much as 12 per cent. It is less sweet than cane sugar.

INAJA PALM, a tree growing in South America, common to the countries near the Amazon; sometimes called the jagua palm. The great woody spathes are sometimes used as cooking utensils and will not burn if filled with water. The fruit grows in clusters and has a tough skin, a soft pulp, and a hard, stony seed. The Indians eat it and monkeys and birds are fond of it.

INCA (in'kä), a Peruvian or rather Quichua title, signifying chief, applied to the imperial head of the Peruvian empire, and also to the governing caste or race from which he sprung. The empire of the Incas, founded according to tradition, in the 11th century, by the celebrated Manco Capac, extended over the table-land of the Andes, from Pasto to the neighborhood of Chile, as well as the low lands on the coast. It was destroyed by the Spaniards under Pizarro and Almagro. The blood royal of the Incas is preserved, or believed to be so, among Indians of the present day.

INCANDESCENCE. See ELECTRIC LIGHT.

INCANTATION, a formula, either said or sung, supposed to add force to magical ceremonies. Incantations in classic times were employed: (1) To control the powers of Nature; (2) to compel the attendance and assistance of supernatural beings; (3) as love spells. In the Authorized Version incantations among the Jews are called enchantments. Those who practiced them are coupled with dreamers.

INCARNATION, the usual theological term for the union of the divine nature with the human in the divine person of Christ. The word *incarnatio* first occurs in the Latin version of Irenæus, and in the Greek fathers we find its equivalent *sarkosis* and *enanthrōpēsis*.

INCENSE, a perfumed vapor usually of smoky appearance. Sir G. Birdwood considers that religious censing of persons and things grew out of purificatory fumigation. The marbles of Nineveh furnish examples of offering incense to the Sungod; and the Hindus employed it from the remotest antiquity.

Jewish.—*Qetoreth, qetorah.* This is sometimes confounded with *lebonah*, frankincense, which is the name of a plant. Incense was compounded of stacte, onycha, galbanum, and pure frankincense, an equal part of each by weight. Any one making a similar composition was to be cut off from the people of God (Exod. xxx: 34-38). Incense was to be burnt every morning and evening on the "altar of incense." (Exod. xxx: 7, 8).

Christian.—In the Roman and Greek Churches it is used in all the solemn offices. It is mentioned in the first *Ordo Romanus*, probably of the 7th century. It is also used in the Catholic and Apostolic Church. In the Anglican Church the use of incense was gradually abandoned after the reign of Edward VI. till the ritualistic revival of the present day; but it has never been formally prohibited.

INCEST, the crime of sexual intercourse between persons related within

the degrees wherein marriage is forbidden by the law of the country. Spiritual incest is a term denoting the crime of sexual intercourse between persons spiritually allied by baptism or confirmation. Also the act of a vicar or other beneficiary who hold two benefices, the one depending on the collation of the other.

INCH, a lineal measure, being the 12th part of a lineal foot, or the 36th part of a lineal yard.

INCH, an island. It appears frequently as an element in the names of small islands belonging to Scotland; as, Inchcolm, etc. In Ireland it appears in the original form of Innis or Ennis.

INCH CAPE. See BELL ROCK.

INCHCOLM (insh-kōm'), a small island of Scotland, in the Firth of Forth, off the coast of Fifeshire, with the ruins of a monastery founded by Alexander I. in 1123, of which Walter Bower, the continuator of Fordun, was abbot from 1418 till 1449.

INCHKEITH (insh-kēth'), a small island of Scotland, in the Firth of Forth, off the Fifeshire coast, containing a lighthouse.

INCIDENCE, the manner of falling on, or the direction in which a body, or a ray of light, heat, etc., falls upon any surface. Angle of incidence, an angle formed by two straight lines, one the line of incidence of a ray of light or heat, or of an elastic body moving to strike a plane, and the other a perpendicular to that plane. The angle formed by the perpendicular and the line of departure taken by the elastic body is called the angle of reflection, and is always equal to the former one. Line of incidence, the straight line taken by a ray of light or heat, or an elastic body moving to strike a plane at an acute or right angle.

INCLINATION, the mutual approach, tendency, or leaning of two bodies, lines, or planes toward each other, so as to make an angle where they meet, or where the lines of their direction meet. This angle is called the "angle of inclination." In pharmacy, the act by which a clear liquor is poured off from some fæces or sediment by only stooping the vessel; also called decantation.

INCLINED PLANE, one of the mechanical powers. It consists of a plane, inclined obliquely to the horizon. The velocity acquired by a body descending an inclined plane is the same as if it had fallen perpendicularly from the same height. The inclined plane is used for the descent of bodies; also for the ascent, by vehicles, etc., of hills far too steep to be directly scaled by wheeled carriages.

INCLINED STRATA, strata which dip at an angle with the horizon.

INCOME TAX, a tax levied directly from income of every description, whether derived from land, capital, or industry, first imposed in Great Britain in January, 1799, during the ministry of Pitt. The rate of income tax in Great Britain varies from year to year, being 8d. in the pound for 1900. Incomes under £150 are usually exempted. In the United States an income tax was first imposed in 1861 of 3 per cent. on incomes over $800, those derived from United States bonds being 1½ per cent.; citizens of the United States residing abroad were taxed 7½ per cent. In 1865 the tax was increased from 3 to 5 per cent., and the 5 per cent. tax on incomes over $10,000 was changed to 10 per cent. upon the excess over $5,000. In 1867 (the exemption having been as low as $600) the tax was uniformly 5 per cent. on all incomes in excess of $1,000. The tax ceased June 30, 1870. The entire amount realized in 10 years was nearly $365,000,000, affecting about 250,000 persons. An income tax was again imposed in 1894, as a feature of the tariff act of that year. But this feature of the act was declared unconstitutional by a decision of the United States Supreme Court in 1895.

The income tax law of 1913 was applied to incomes exceeding $3,000 and $4,000 in the case of married persons, a tax of 1 per cent. being levied on all incomes exceeding the minimum, and an additional tax on higher incomes as in this schedule:

	Exceeding	*And not over*		*Exceeding*	*And not over*
1	$20,000	$50,000	4	$100,000	$250,000
2	50,000	75,000	5	250,000	500,000
3	75,000	100,000	6	500,000	———

All payers of income shall deduct annual legal tax excepting: dividends on stocks and corporations, interest on trust funds, payments to a corporation. The law of 1916 was essentially the same, with important modification. The "normal" rate was doubled and there were "additional" rates, especially in the case of large incomes.

The Income Tax bill of 1916 doubled the above taxes, to provide for extraordinary expenses of the government. The act was amended in 1917 to provide additional revenue for war purposes. Additional amendments were made by the War Revenue act of 1918. Many of the States levied an income tax, similar

in general details to the Federal tax, in 1918 and the year following. This tax was to provide for increased expenses.

INCOMMENSURABLE, a state of deprivation or non-existence (as regards two kindred quantities) of a common unit, or, more strictly, a magnitude which cannot be measured by another, taken as unity. Two quantities of the same kind are incommensurable with respect to each other, when they have not a common unit—that is, when there is no quantity of the same kind so small that it is contained in both an exact number of times. Thus the diagonal and side of a square are incommensurable, for it has been shown that if we denote the side of the square by 1, the diagonal will be denoted by the square root of 2; but the square root of 2 is incommensurable with 1, because the square root of an imperfect square cannot be expressed in exact terms of 1.

INCREMENT, in mathematics, a quantity, generally variable, added to the independent variable in a variable expression. The function also undergoes a corresponding change, which is called an increment or decrement, according as the function is increasing or decreasing. When the increment or decrement is infinitely small, it is called a differential.

INCREMENT, UNEARNED, the increase in the rent of land due to the growth of industrial undertakings and of towns, and the general progress of society.

INCUBATION, in pathology, the maturation of morbific matter introduced into the system. The word has reference, also, to the act of sleeping for oracular dreams.

Artificial incubation is the hatching of eggs by means of heat artificially applied. The Egyptians have long done so successfully by means of heated ovens. Hatching eggs by incubation has become a lucrative business in many sections of the United States.

Period of incubation, in pathology, this is the interval that elapses between the introduction of morbific matter into the body, and the commencement of the disease thence resulting.

INCUBATOR, a piece of apparatus in which a constant, predetermined temperature may be maintained. Its principal scientific use is for the growth of bacterial culture. It is frequently a double box of copper or other metal insulated with miner wool or felt. The space between the walls is usually filled with water, making it in effect a water bath. The source of heat is generally a Bunsen burner, although in some cases electric coils have been used. An adjustable thermostat which operates on the gas flow, is used to control the temperature. The temperature desired, and the type of work for which the apparatus is to be used, largely determine the design, but it is usual to provide a heavily insulated glass door, in order that the condition of the contents may be observed from time to time. See INCUBATION.

INCUS, one of the small bones of the ear. It stands between the malleus and the stapes, and is connected with them by articular surfaces.

INDEMNITY, an act designed to relieve the government or any of its officers from penalties when they have been compelled by exceptional circumstances to omit the performance of some duty, or to violate or even to suspend some law.

INDENTED, in heraldry, a term signifying notched like the teeth of a saw, but smaller than dancette. Applied to one of the lines of partition; ordinaries are also thus borne.

INDENTURE, a deed entered into between two or more parties, and so called because duplicates of every deed between two or more parties were once written on one skin, which was cut in half, with a jagged or indented edge; so that they were seen to belong to one another.

INDEPENDENCE, a city of Kansas, the county seat of Montgomery co. It is on the Verdigris River, and on the Atchison, Topeka and Santa Fe and the Missouri Pacific railroads. It is the center of an important gas and oil field region. Its industries include cotton mills, planing mills, flour mills, a glass factory, cement plants, machine shops, etc. It has hospitals, a public library, an excellent park system, a courthouse, high schools, etc. Pop. (1910) 10,480; (1920) 11,920.

INDEPENDENCE, a city and county-seat of Jackson co., Mo.; on the Chicago and Alton, the Kansas City Southern, and the Missouri Pacific railroads; 4 miles S. of the Missouri river, and 10 miles E. of Kansas City. It is the seat of St. Mary's Academy. The city has public high school, public library, Washington and Fairmount Parks, electric light plants, a National and other banks, and many important industrial establishments. Independence was occupied by the Mormons in 1831-1838, and during this period was a noted rendezvous for their emigrants. Its nearness to Kansas City makes many of its business interests

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A STREET SCENE IN DELHI, CAPITAL OF INDIA

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A BRIDGE OF RAWHIDE ROPE ACROSS THE SRINAGAR RIVER, INDIA

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A GROUP OF SNAKE CHARMERS, INDIA

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ELEPHANTS READY FOR A STATE PARADE IN DELHI, INDIA

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THE DOMES OF THE PEARL MOSQUE, AGRA, INDIA

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INDIANS AND LLAMAS IN THE MOUNTAINS OF PERU

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INDIANS FROM PATAGONIA, SOUTH AMERICA

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POTTERY MAKING BY HOPI INDIAN WOMEN IN THE AMERICAN SOUTHWEST

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AMERICAN INDIANS FROM THE INTERIOR OF PERU

common with those of that city. Pop. (1910) 9,859; (1920) 11,686.

INDEPENDENCE, DECLARATION OF. See DECLARATION OF INDEPENDENCE.

INDEPENDENCIA, also called Fray Bentos, a town in Uruguay, the capital of the Department of Rio Negro. It is on the Uruguay river. It has handsome public buildings and has an important port. The surrounding country is devoted to stock-raising. The city has important meat-packing establishments. Pop., about 10,000.

INDEPENDENT CATHOLIC CHURCH IN THE UNITED STATES, THE (POLISH), an independent church founded in Chicago by the Rev. Anthony Kozlowski, and consisting of Polish immigrants who broke away from Catholic Church discipline. The church since its establishment has entered into relations with old Catholic congregations in Europe and the Protestant Episcopal Church in the United States, without however merging with either. The founder was made bishop at an Old Catholic conference in Europe. The church reports a growth in membership, and has schools, hospitals, orphanages, and homes for the aged. In 1915 40 churches, 35 ministers, and 18,500 members were reported.

INDETERMINATE, in mathematics, having an indefinite number of values or solutions. Indeterminate analysis is a branch of algebra in which there are always given a greater number of unknown quantities than there are independent equations, by which means the number of solutions is indefinite.

INDETERMINATE SENTENCE, a sentence of a person convicted of crime which is not a definite, but an indefinite length of time. Under the preceding practice of courts all prisoners were sentenced for a definite time, but in places where the indeterminate sentence is in use the judge simply gives the sentence as the law establishes it, *e. g.,* not less than five nor more than twelve years. This method allows the judge to free the prisoner if he has demonstrated the genuineness of his reform and to hold him to the maximum sentence if he has not. This method has been approved by all the eminent penologists who maintain that reform of the prisoner is the aim of penology.

INDEX, a compilation of figured or numbered entries for purposes of reference. In mathematics, the index of a radical is a number written over the radical sign to denote the degree of the root to be extracted. An index is generally a whole number greater than 2. When the square root is indicated, the index is generally omitted, being understood.

Congregation of the Index is a congregation founded by Pius V. in 1571. It consists chiefly of cardinals, nominated by the Roman Pontiff, with other members, who are called consultors. The secretary is always a Dominican. Its duty is to examine and correct, or prohibit the reading of, books which it deems heretical, or which contain matter dangerous to faith or morals.

INDEX, CEPHALIC, CRANIAL, PELVIC, terms used to designate the proportions of parts of the body or of a skeleton, employed especially by anthropologists in determining racial groups. The most commonly used index is the ratio of the width of the head to the length, known as the cephalic index when applied to living beings, and cranial index when applied to the skull. The length of the skull is taken just above the eyes where the forehead protrudes most, while the width is taken at any part of the head having the greatest breadth. The metric system is used in all measurements. Tables of index numbers have been compiled so that indices may be determined without actually working out the accepted formula,—$\frac{\text{Width} \times 100}{\text{Length}} = 1.$

Heads may be classified also according to indices other than those of length and breadth of the skull:—facial, nasal, dental, and pelvic being often used. The cephalic index does not always give accurate information, because it is taken only on the upper part of the head, and is not a sufficient guide to the shape of the head as a whole. Heads having an entirely different cross sectional outline would fall into the same class by this method of measurement, so it can be taken as an exact guide only when a large number of skulls of the same race are observed to give the same result.

INDEX NUMBERS are used by economic statisticians to measure the amount of change that takes place in the value of money, as shown in its relative purchasing power. It is obvious that money itself could not be used as the measure of its own value, nor could any one commodity which would be purchased with a fixed sum of money be used, since single commodities fluctuate in value even more than money. However, the average price fluctuations of a number of different commodities show

very clearly the amount of change that has taken place in the value of money. These totals of average prices for a year form the basis of comparison for variations, and are called index numbers.

The averages, to be exact, must be "weighted," which consists of giving commodities different degrees of importance, since in a list including potatoes and fountain pens, the potatoes should of course be given a higher weight, because more money is spent on them than on fountain pens.

In the United States the Bureau of Labor, Bradstreets, and Babson's compile and publish index numbers, while the "London Economist" and the British Board of Trade are the leading English authorities, all of which usually agree about the general trend of prices.

Because of the greater ease with which prices may be collected and because of the more general standardization of quality, the wholesale prices are used in computing the index numbers. The average may be computed harmonically, geometrically, or the simple unweighted arithmetic average may be used. The later method, if done intelligently, produces results which do not vary greatly from those obtained by the more elaborate methods.

INDEX PROHIBITORIUS, a list of books which may not be read by Roman Catholics, cleric or lay, on pain of excommunication. The first Index Librorum Prohibitorum was published (1564) in the pontificate of Pius IV., and various editions have since appeared.

INDIA, BRITISH, an extensive region of Southern Asia, celebrated during many ages for its riches and valuable natural productions, its beautiful manufactures and costly merchandise, the magnificence of its sovereigns, and the early civilization of its people. HITHER INDIA is the central peninsula of southern Asia; its length may be stated approximately at 1,900 miles, and its width at 1,600 miles, with an area of about 1,300,000 square miles. Pop. about 320,000,000. The natural boundaries of this vast region are, on the N., the range of the Himalaya Mountains which separates it from Tartary, China, and Tibet; on the W. the Suliman Mountains divide it from Afghanistan and Beloochistan; on the S. the Arabian Sea and the Gulf of Bengal; and on the E. the hill ranges which separate Chittagong and Assam from Burma. From the mouth of the Brahmaputra and the Indus the E. and W. coasts, inclining toward the same point, meet at Cape Comorin, and thus give to South India the form of an irregular triangle. The two sides of the triangle have each a coast line of about 2,000 miles. India, from its great extent of sea-board, is essentially a maritime country. FARTHER INDIA is the usual name given to the S. E. peninsula of Asia. The great natural divisions of Hither India are the sub-Himalayan countries, the plain of the Ganges, the plain of the Indus, the highlands of northern Hindustan, and the peninsular portion of the country to the S. of the Vindhya Mountains.

Topography. — The sub-Himalayan countries form an elevated tract lying between the chief ridge of the Himalayas and the lower elevations which adjoin the plains of the Ganges and Indus. The plain of the Ganges, which includes Bengal, Bahar, the Doab, Oude, and Rohilcund, is a vast alluvial flat, extending from the Bay of Bengal to the Punjab. Scattered over the agricultural districts, and massed in the great cities and towns, there are not less than 100,000,000 people. The plains of the Indus in the N. W. are less extensive than those of the Ganges, and are separated from the latter by the Aravulli Hills. The Punjab occupies the N. portion. S. of the Punjab, and parallel with the river, the great sandy desert of the Indus extends for nearly 500 miles. The horse and camel alone can cross this desert, which is described in Hindu geography as "the region of death." Like the Terai, it forms a great physical barrier which separates west and east India. The highlands of northern Hindustan extend from the Vindhya Mountains as a base to the border of the Thur. They include the tableland of Malwa and Rajpootana or Rajasthan, which has an elevation of about 2,000 feet above the level of the sea. The peninsular portion of India, S. of the Vindhya Mountains, is called by the natives the Deccan. The most remarkable geographical feature of the area is a central tableland—vast plateau—rising from 2,000 to 3,000 feet above the sea, and inclosed on all sides by lofty mountains, between which and the sea, on the E. and W., are narrow strips of low, flat country, divided into several districts. From the low country on the coast to the central tableland the mountains rise abruptly in a succession of gigantic terraces or steps, and hence the name of "Ghauts."

Vegetable Productions.—The vegetation of India is as varied as its soil and climate, passing from the flora of a tropical to that of an alpine region. The groves of palm that border the coast, and, in the interior, the umbrageous mango topes, are striking features of In-

66° A 70° B 74° C 78° D 82° E 86° F 90° G 94° H 98°
38° 34° 30° 26° 22°
BOKHARA
PAMIRS
EASTERN TURKESTAN
Afghan Turkistan
SINKIANG
Amu Darya R.
Kundus
Faisabad
Kala Pindjah
Tashkurgan
Tashkhana
Khotan
Keria
Sorgak
AFGHANISTAN
Hindu Kush Mts.
CHITRAL
Mastuj
Chitral
Yasin
Hunza
Gilgit
Karakoram Range
Shimshal
Ak Tagh
Kizil Jilga
Kabul R.
KABUL
Jagdalak
Peshawar
Shekhabad
Dir
Bunji
Ronda
Astor
Skardo
Baltistan
Dahni Murghi
Lingti Thang Plains
Lanak Pass
KASHMIR
Srinagar
Ladakh
Tanksa
Deb
Suru
Punch
Islamabad
Zangla
Padam
Rudok
Demchok
Lankhar
Tilingmath
TIBET
Ghasni
Edwardesabad
Kohat
Rawal Pindi
Naoshera
Kistawar
Zanskar
Shushal
Rupshu
Kangmar
Hanle
Western Sulaiman Mts.
Takht-i-Sulaiman
Sandeman
Loralai
Anamber
Leish
Jhelum
Jammu
Kilar
Chamba
Dankar
Gujrat
Shahpur
Gurdaspur
Kangra
Chini
Hoshiarpur
Ropar
Simla
Garhwal
Badrinath
Nanda Devi 25,606
Srinagar
Tehri
Montgomery
Firozpur
Ludhiana
Kalka
Ambala
Patiala
Dhora
Sirsa
Sultanpur
Kotdwara
Almora
Naini Tal
Sil Garhi
Jumla
Muktinath
Dhaulagiri 26,826
Salang
Gosen Than 26,309
Mt. Everest 29,002
Kulhakangri
Kanchanjanga 28,150
SIKKIM
Mt. PINAKHA
Sadiya
Dibrugarh
Tasgong
Dhirang Jong
BHUTAN
TUMLONG
Lakhimpur
Sibsagar
Golaghat
Nowgong
Tezpur
Tura Zong
Diwangiri
Jalpaiguri
Kuch Behar
Dhubri
Goalpara
Gauhati
Shillong
Kohima
Cherra Punji
Manipur
Katha
Moirang
Kalemyo
Mt. Victoria
Mandalay
Meiktila
Myingyan
Yamethin
Pegu
Prome
Toungoo
Thayetmyo
Henzada
Bassein
Akyab
Sandoway
Arakan Yoma
Irrawaddy R.
Sittang R.
Salween R.
Tavoy
Mergui
Amherst
Moulmein
Martaban
Tenasserim
Andaman Is.
Nicobar Is.
Port Blair
Malacca
Penang
Singapore
Sumatra
Java
Borneo
Celebes
Timor
Australia
Arafura Sea
Timor Sea
Gulf of Carpentaria
Torres Strait
Coral Sea
Solomon Is.
New Guinea
Bismarck Archipelago
New Britain
New Ireland
Admiralty Is.
Caroline Is.
Marianne Is.
Guam
Philippine Is.
Luzon
Mindoro
Mindanao
Sulu Archipelago
Palawan
Formosa
Hong Kong
Canton
Macao
Hainan
Tonkin
Gulf of Tonkin
Hanoi
Haiphong
Annam
Cochin China
Saigon
Cambodia
Siam
Bangkok
Gulf of Siam
Malay Peninsula
Kra Isthmus
Andaman Sea
Bay of Bengal
Indian Ocean
Equator
TROPIC OF CANCER
Tropic of Cancer
Tropic of Capricorn
Equator
Meridian of the Indus
Meridian of Greenwich
Meridian of Calcutta
Meridian of Madras
Meridian of Bombay
Meridian of Ceylon
Meridian of Singapore
Meridian of Hong Kong
Meridian of Manila
Meridian of Sydney
Meridian of Melbourne
Meridian of Auckland
Meridian of Wellington
Meridian of Honolulu
Meridian of San Francisco
Meridian of Vancouver
Meridian of Seattle
Meridian of Portland
Meridian of Los Angeles
Meridian of Denver
Meridian of Chicago
Meridian of New York
Meridian of Boston
Meridian of Halifax
Meridian of Quebec
Meridian of Montreal
Meridian of Ottawa
Meridian of Toronto
Meridian of Winnipeg
Meridian of Regina
Meridian of Edmonton
Meridian of Calgary
Meridian of Victoria
Meridian of Prince Rupert
Meridian of Juneau
Meridian of Anchorage
Meridian of Fairbanks
Meridian of Nome
Meridian of Barrow
Meridian of Point Barrow
Meridian of Point Hope
Meridian of Kotzebue
Meridian of Unalakleet
Meridian of St. Michael
Meridian of Bethel
Meridian of Dillingham
Meridian of Kodiak
Meridian of Cordova
Meridian of Valdez
Meridian of Seward
Meridian of Kenai
Meridian of Homer
Meridian of Kodiak
Meridian of Unalaska
Meridian of Dutch Harbor
Meridian of Attu
Meridian of Kiska
Meridian of Adak
Meridian of Shemya
Meridian of Eareckson
Meridian of Midway
Meridian of Wake
Meridian of Johnston
Meridian of Palmyra
Meridian of Christmas
Meridian of Fanning
Meridian of Canton
Meridian of Enderbury
Meridian of Phoenix
Meridian of Tokelau
Meridian of Samoa
Meridian of Tonga
Meridian of Fiji
Meridian of New Caledonia
Meridian of Norfolk
Meridian of Lord Howe
Meridian of Macquarie
Meridian of Auckland
Meridian of Campbell
Meridian of Antipodes
Meridian of Bounty
Meridian of Chatham
Meridian of Kermadec
Meridian of Tonga
Meridian of Samoa
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Meridian of Toronto
Meridian of Ottawa
Meridian of Montreal
Meridian of Quebec
Meridian of Halifax
Meridian of Boston
Meridian of New York
Meridian of Chicago
Meridian of Denver
Meridian of Los Angeles
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Meridian of Honolulu
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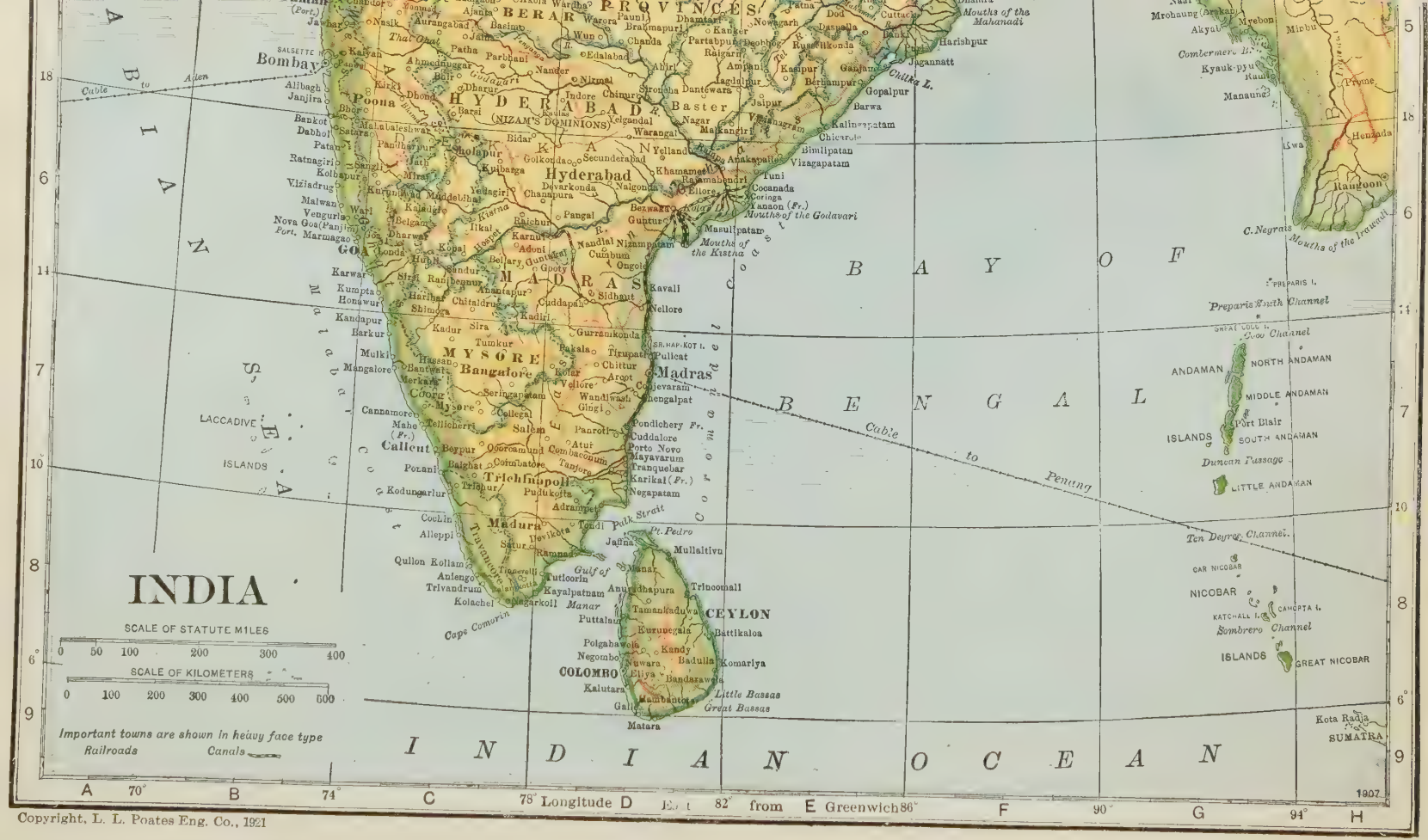
Meridian of Auckland
Meridian of Sydney
Meridian of Melbourne
Meridian of Manila
Meridian of Singapore
Meridian of Ceylon
Meridian of Bombay
Meridian of Madras
Meridian of Calcutta
Meridian of Greenwich
Meridian of the Indus
Equator
Tropic of Cancer
Tropic of Capricorn
Meridian of Greenwich
Meridian of the Indus



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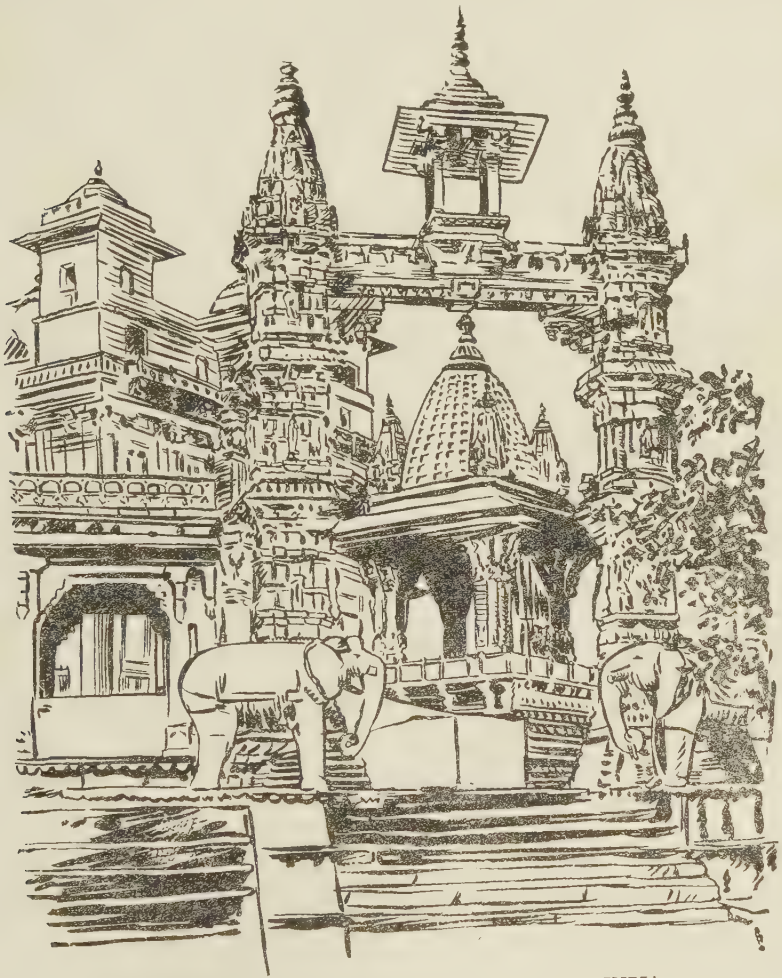
dian scenery. Rice is the chief article of food in India, and is produced in all parts of the country in which irrigation is practiced. Maize and wheat are the grain cultivated in the Northwest Provinces. Opium is one of the most valuable products of India. Coffee is largely produced in Ceylon, and the cultivation of the plant is rapidly spreading in south India. Tea cultivation is now carried on with success in Assam, and is spreading over all the hill countries of northwest India. Cinchona, introduced from South America in 1860, has been naturalized with great success. The growth of cotton has been much extended. The finest is produced in Berar. The rhea, or jute plant, is grown in Assam and Bengal, and has recently given rise to an important trade. India rubber is another important product of Assam, the demand for which is increasing. In order to protect existing forests and extend the area of the timber-producing districts the Indian Forest Conservancy Department was organized.

Animals.—The domesticated animals are horses, asses, mules, oxen, buffaloes, sheep, and elephants. Of wild beasts the most formidable is the Bengal tiger. The other beasts of prey are leopards, wolves, jackals, panthers, bears, hyenas, lynxes, and foxes. Of poisonous snakes the cobra da capello or black-hooded snake, the cobra manilla, and the sand snake are the most common.



THE AMBER TEMPLE AT JAGAT HEREMAIN, INDIA

Climate.—Hindustan proper may be said to have three well-marked seasons,

—the cool, the hot, and the rainy. The climate of south India is greatly regulated by the monsoons. The central table-land is cool, dry, and healthy.

Social System and Government.—Two of the most striking peculiarities of the social condition of the Hindus are the iron institution of caste and the village system. The latter is very simple. A village in Hindustan is a district embracing an area of some hundreds or thousands of acres of land, and is under the administration of native functionaries, the principal of whom is the *potail* ("head inhabitant"), a kind of chief magistrate. Under this simple form of municipal government the inhabitants of the country have lived from time immemorial.

Agriculture and Industries.—The chief industry of India is agriculture. Out of a total population of about 313,000,000 nearly 225,000,000 are engaged in this form of industry. Rice is the largest product. There were, in 1918–19, 23,672,000 tons produced; of wheat there were 7,502,000 tons; of cotton, 3,671,000 bales; of jute, 6,955,600 bales; and of sugar cane, 2,337,000 tons. The production of tea in the same year was 380,459,000 pounds. The total area under cultivation was about 275,000,000 acres. After agriculture, the most important industry is the weaving of cotton cloth. Other industries are silk rearing and weaving, shawl and carpet weaving, wood carving, and metal working. The tea industry employs nearly 800,000 persons. The area planted with tea in 1918–19 was about 625,800 acres. There are over 235 cotton mills, and over 1,500 cotton ginning, cleaning, and pressing mills and factories. The cloth production in 1919 was 349,580,450 pounds.

Mineral Production.—The mineral production in 1917, the latest year for which figures are available, amounted to £13,266,566. The most important product is coal, which was valued at £4,511,645. Gold was produced with a value of £2,221,889. Other minerals of value are petroleum, manganese ore, salt, and saltpetre.

Commerce.—The total exports for the year ending March, 1919, amounted to $823,574,016, and the imports to $548,389,663. The exports considerably exceed those of March, 1914, while the imports are about $50,000,000 less. The chief articles of import are cotton manufactures, cotton yarn, iron and steel, machinery, copper, woolens, and chemicals. The principal articles of export are tea, wheat, rice, rice meal and flour, and barley. The bulk of the trade is with the United Kingdom.

Transportation.—There were in 1919 36,616 miles of railway. Of these, 7,308 miles were owned by the State and 19,107 were worked by companies. The other lines were conducted under various conditions. There were in 1919 69,283 post offices and 10,373 telegraph offices.

Education.—The educational institutions are of two classes, those in which the courses of study conform to the standards prescribed by the Department of Public Instruction and are known as public, and those which do not fulfill these conditions, and are called private. The total number of institutions for instruction in 1919 was 196,919. These were attended by 7,948,058 scholars. There were 128,480 primary schools for males and 19,385 for females. The colleges numbered 185 for males and 16 for females, attended by 61,827 males and 11,109 females. The colleges are affiliated with the five universities, at Calcutta, Madras, Bombay, the Punjab, and Allahabad. A Hindu university has recently been established at Benares, and another university at Poona. A university has also been created for the Mysore state.

Finance.—The revenue retained by the government in India for its own purposes and for meeting the expenditure incurred by the Secretary of State in England, is assigned as imperial, while that used by the local government is called provincial. The imperial revenue is derived chiefly from land revenue, opium, and other taxes. It amounted in 1918 to £82,060,000. The provincial revenue amounted to £35,888,000. The total revenue was £121,186,000. The total expenditure was £125,754,000. The chief expenditures are for civil salaries, military services, interest on railway debts, etc. The total debt of British India in 1919 amounted to £456,294,269.

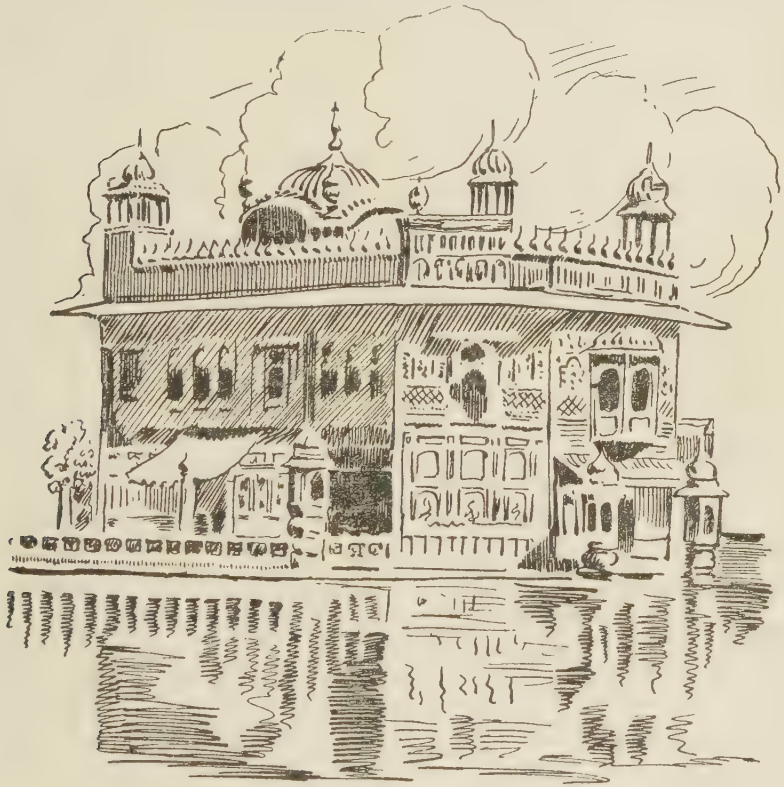
Defense.—The military forces in India consist of the British Regular Forces, the Native Army, the Volunteers, and the Imperial Service Troops, all under the control of a commander-in-chief who is a member of the viceroy's council. At the outbreak of the World War the army in India was composed of about 75,000 British troops and about 240,000 native troops. The total number of native troops recruited during the war, up to Nov. 11, 1918, was 1,161,789. The defense force act was put in force in 1917 and by its terms compulsory service was applied to European and British subjects, between the ages of 16 and 50. The total number of British and native troops sent from India to France, Mesopotamia, East Africa, Egypt, Galipoli and other fronts numbered 1,215,338.

The casualties numbered about 115,000. By the end of 1919 only about 13,000 British troops remained to be demobilized in India.

Government.—The present form of government of India results from the Indian Act of 1915, and amended in 1916 and in 1919. The administration is entrusted to a Secretary of State for India, who resides in England and who is assisted by a council of from 8 to 12 members. In 1919 power was given for the appointment of a high commissioner of India, to whom may be delegated powers by the Secretary of State respecting contracts.

In India, the supreme executive authority is vested in a Governor-General Council. The governor-general, or viceroy, is appointed by the Crown and holds office generally for five years. There is a legislature consisting of the governor-general and two chambers, the Council of State and the Legislative Assembly. The Council of State consists of not more than 60 members, of whom not more than 20 are officials. The Legislative Assembly consists of 144 members, of whom 26 are officials, and 103 are elected. The Council of State exists for five years and the Assembly for three years.

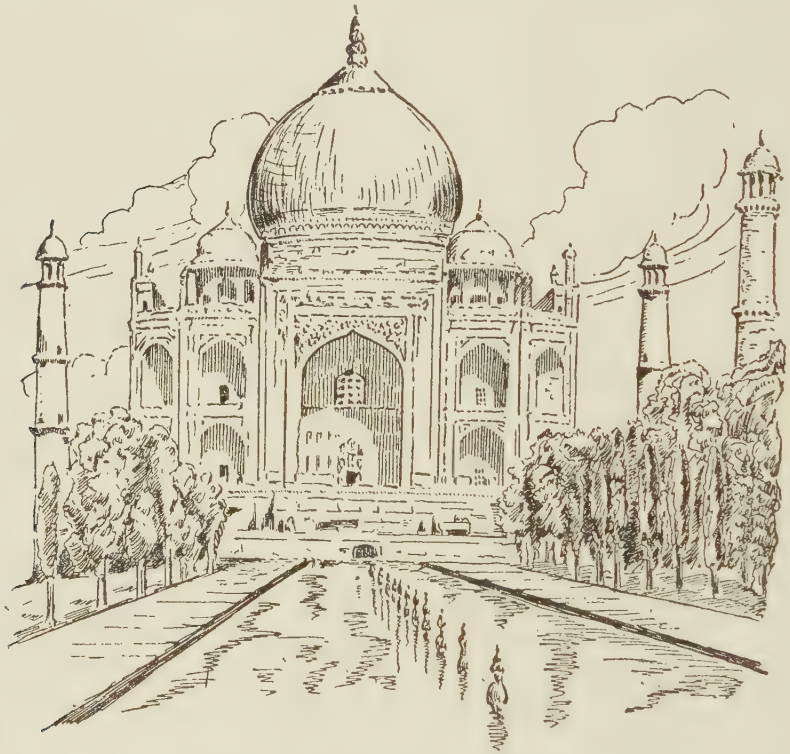
The various departments of government are in charge of the governor-general's executive council. For administrative purposes India is divided into 15 administrations, each of which has a governor, lieutenant-governor, or chief commissionary. Important changes in the government of the provinces were brought about by the Government of India Act of 1919, which went into effect in 1920. This brings about a greater amount of self-government than heretofore existed.



THE GOLDEN TEMPLE AT AMRITSAR, INDIA

Religion, Philosophy, History, etc.—Hindu theology is contained in the ancient books of the Vedas, which inculcate the worship of the deities, Brahma, Vishnu, and Siva, the transmigration of souls, and their final absorption into the deity. Buddhism had also its origin in Hindustan, and Mohammedism now extensively prevails. Philosophy, science,

and the arts were cultivated from an early period by the Hindus, especially the domestic arts of weaving, dyeing, and working in metals and gems. From the earliest records of history the nations of the Western World derived their merchandise from India. The country was entered and partly subdued by Alexander the Great. About 126 B. C. it was also invaded by the Tartars, or Scythians of the Greeks. From the 10th to the 12th century of the Christian era the Mohammedans overran and conquered considerable portions of Hindustan, and subsequently the Mogul empire was formed. In 1428 India was first visited by Vasco de Gama, and later the Portuguese and Dutch established settlements on the peninsula, but the former never acquired more than a paltry territory on the W. coast, and the latter a few commercial factories. The French influence in India, at one time considerable, also yielded to the superior enterprise of the British, and finally the French relinquished the field. In 1625 the first English settlement was made by a company of merchants in a small spot of the Coromandel coast of 5 square miles, transferred in 1653 to Madras. A short time previous a settlement had also been obtained at Hooghly, which afterward became the Calcutta station. In 1687 Bombay was erected into a presidency. In 1773, by act of the British Legislature, the three provinces were placed under the administration of a governor-general, and Calcutta was made the seat of a supreme court of judicature, the presidencies of Madras and Bombay being made subordinate to that of Bengal. Hitherto the affairs of India had been managed by the East India Company, but in 1784 a board of control was appointed by the government, the president of which became secretary of state for India. From the year 1750, when the warlike acquisition of territory commenced under Lord Clive, a succession of conquests, almost forced upon the British contrary to their inclinations, have now placed nearly all India under their sway.



TAJ MAHAL, AGRA, INDIA

The early part of British rule was marked by wars with the native princes. Indeed, British power was maintained only by constant fighting. Gradually,

however, all the fierce tribes were conquered, although at great cost of men and money. The most important campaigns carried on during these years were the First Burmese War, from 1823 to 1828; the Afghan War, which resulted in British disasters, in 1842; the conquest of Sind by Sir Charles Napier, from 1842 to 1844; the first Sikh, in 1845–6; and the Second Burmese War, from 1849 to 1852. By 1856 India was apparently conquered, and was comparatively contented with British rule. In that year, however, dissatisfaction arose and became widespread. This was chiefly due to the introduction of modern European improvements and by the annexation policy adopted by the British Government. There had been a failure on the part of English officers to respect the religious feelings of their Indian subjects. This aroused the religious prejudices of the natives, especially the Hindus. Dissatisfaction broke out on May 10, 1857, and is known as the Sepoy Mutiny, from the fact that a large part of Sepoy troops were among the mutineers. Their insurrection rapidly spread until practically all the British residents in India were in danger. The principal events of the struggle were the siege of Lucknow, which is one of the most famous sieges of history, and the siege of Cawnpore. Following the suppression of the mutiny, the government of India was transferred to the British Crown in 1858. From that time no serious outbreak has occurred, although small wars have occurred yearly. Queen Victoria was proclaimed Empress of India, in 1877. Burma was formally annexed by the English on Jan. 1, 1886. Lord Curzon of Kedleston became viceroy in 1898. He devoted himself with great energy to combat plague and famine, from which the country was then suffering.

Tibet was opened to British trade as a result of the exposition of 1903. Bengal was partitioned in 1905, and this resulted in much bitterness of feeling among the natives. Lord Curzon resigned in 1905, chiefly as a result of the controversy with Lord Kitchener over the conduct of military affairs. The Earl of Minto was appointed as successor. During his administration there was much discontent, caused chiefly by the wide and swift spread of radical theories among the natives, and a very definite desire for Home Rule. This feeling was stimulated by the victory of Japan over Russia. The government took strong measures to suppress the agitation and at the same time introduced many reforms. In 1910 Lord Hardinge became viceroy. King George, accompanied by Queen Mary, visited India in 1911 and was enthusiastically received. In spite of its internal disturbances, at the outbreak of the World War in 1914 the country at large showed great loyalty to the British Crown. Many of the Indian princes volunteered for service. Indian troops were sent to France and other battlefields, where they greatly distinguished themselves by their courage and endurance. During the progress of the war, there was continued unrest throughout India and martial law was declared in some parts of the Empire. Much of the trouble was due to propaganda caused by the Mohammedan agitations and by Hindu priests. Lord Hardinge was succeeded in 1916 by Baron Chelmsford, formerly governor of Queensland. During the early part of April, 1919, serious disturbances occurred in India. These were scattered over a wide area, and were largely due to legislation enacted for the purpose of suppressing sedition. During 1919 measures were considered in the British Parliament for changes in the Government of India. Lord Chelmsford was succeeded by Earl Reading as Governor-General in 1921.

The Catholic missions now confine their attention to their Christian converts. The earliest Protestant missionaries in India came from Holland and Denmark. England's first missionary effort was put forward by the Society for the Propagation of the Gospel, and the Christian Knowledge Society, which commenced in the beginning of the 18th century by aiding the Danish mission already established in South India. The entire number of Indian Protestants in India is about 500,000.

Governors-General.—The following is a list of the governors-general of India, with the dates of their appointments.

Warren Hastings, 1772.
Sir J. McPherson, 1785.
Earl (Marquis) Cornwallis, 1786.
Lord Teignmouth (Sir J. Shore), 1793.
Earl of Mornington (Marquis Wellesley), 1798.
Marquis Cornwallis, 1805.
Sir G. Barlow, 1805.
Earl of Minto, 1807.
Earl Moira (Marquis of Hastings), 1813.
Earl Amherst, 1823.
Lord W. Bentinck, 1828.
Lord Auckland, 1835.
Lord Ellenborough, 1842.
Sir H. (Lord) Harding, 1844.
Earl Dalhousie, 1847.
Lord Canning, 1855.
Lord Elgin, 1862.
Sir John Lawrence, 1863.
Earl of Mayo, 1868.
Lord Northbrook, 1872.
Lord Lytton, 1876.
Marquis of Ripon, 1880.
Earl Dufferin and Ava, 1884.
Marquis of Lansdowne, 1888.
Lord Elgin, 1893.
Lord Curzon, 1898.
Earl of Minto, 1905.
Lord Hardinge, 1910.
Lord Chelmsford, 1916.
Earl Reading, 1921.

INDIA RUBBER. See RUBBER.

INDIAN ARCHITECTURE, that form of the building art existing in, and to a certain extent peculiar to, India. No remains exist earlier than the 3d century B. C., when the Emperor Asoka made Buddhism the religion of India. After that period there arose (1) Buddhist architecture, followed by (2) the Jaina Architecture. Of styles more distinctively Hindu there were four—viz., (3) the Southern, (4) the Northern, and (5) the Modern Hindu; and (6) the Cashmirian. Temples, etc., of the Southern Hindu style exist within the area formed by a line drawn E. and W. from Madras to Mangalore, constituting a triangle, having each side 400 miles. The chief race is the Tamul. The temples are divided into a square Viman (the temple proper), with a pyramidal roof of one or more stories, mantapas (porches), gopuras (gate pyramids), and choultries (pillared halls). The most splendid example is the temple at Tanjore, its base being a square of 82 feet. The finest temples are in Orissa, especially Bobaneswar, built about A. D. 657. They have a curved spire, sometimes surrounded by other spires. The Modern Hindu style is this ancient one modified by Mohammedan styles.

INDIANS, AMERICAN, the original inhabitants of the western hemisphere. The name Indian was bestowed by Columbus upon the copper-colored natives who greeted him when he first set foot on the soil of the New World, which he at that time supposed constituted a portion of India. The name has remained, and with the prefix "American" includes all the native races inhabiting the region from Mexico to the Arctic Ocean on the N., and to Tierra del Fuego on the S.

Distribution.—The Esquimaux or Innuit, the most N. of these tribes, extend across the continent along the Polar Sea. Next below them are the allied Kenai and Athabascan groups, the former represented chiefly by the Yellow Knife or Atna tribe on the Yukon river. The Athabascans are chiefly found between Hudson Bay and the Rocky Mountains, but include besides the Chippeways, Coppermine, Dogrib, and Beaver Indians; the Tlatskanai, Unkwa, and Hoopah Indians of the Oregon coast; the Navajo tribe of the Highlands of New Mexico; the Apaches, ranging from the W. Colorado to Chihuahua and Coahuila; and the Lipani, N. of the mouth of the Rio Grande del Norte. Canada and the United States E. of the Mississippi were formerly inhabited by the Algonquin-Lenape and the Iroquois, generally at war with each other. The extreme W. of the Algonquin region was occupied by the Blackfeet Indians; the Ojibways held the shores of Lake Superior; S. and W. of Hudson Bay were the Crees. The Lenni-Lenape section of the Algonquin-Lenape group comprised the five nations of the Delawares, including the Mohicans. The Iroquois included the Senecas, Cayugas, Onondagas, Oneidas, and Mohawks, who formed a league of five nations, afterward joined by the Tuscaroras. The Hurons were of the Iroquois group. The Dakotah or Sioux group occupied the plains between the Rocky Mountains and the Mississippi as far S. as Arkansas, and included the Assiniboines, Winnepegs, Iowas, Omahas, Osages, Kansas, Arkansas, Menitarees, Crows, and Mandans. W. of the Mississippi also were the Pawnees and Rickarees about the Nebraska or Platte river, and to the S. E. were the Choctaws and Chickasaws. In the Rocky Mountain regions were the Shoshone or Snake Indians, including the Comanches and others. The Cherokee tribes, which inhabited South and North Carolina, formed a detached group, and the Texas Indians were comprised in many small and diverse tribes. Below these, in New Mexico, a more advanced and distinct family is found called Moquis or Pueblo Indians. Of the numerous families occupying Mexico the Nahuatls or Aztecs were the most powerful and civilized. The Otomis, speaking a peculiar language, were also a numerous people in Mexico. In Central America the predominating family was the Maya, including the Quichés, Kachiquels, etc. Portions of the Aztec tribes were also found in Central America. In South America the leading and more advanced families were those that made up the Peruvian empire, among which the Inca race and the Aymaras were the chief. The Araucanians, to the S. of these, in Chile, had a considerable resemblance to the Algonquins and Iroquois of North America. The remaining portions of the continent, including the great alluvial tracts of the Atlantic slope, were principally occupied by the Guaranis; but along its N. coast were found the Caribs, who spread also over the Antilles and most of the West Indian Islands. In the extreme S. part of the continent live the tall Patagonians or Tehuelches, and squalid families in some respects resembling the more debased Australians.

Origin.—Speculation in regard to the origin of the American Indian has no limit; definite knowledge of his origin is an unknown quantity. By some, the tribes are considered an aboriginal and single stock, by others a mixture of Mon-

golian, Polynesian and Caucasian types, while still others claim that they are derived from the grafting of old-world races on a true American race. Much has also been written in support of the theory that these aborigines migrated from the old continent, many insisting that they must be descendants of 10 lost tribes of Israel, while, on the other hand, prominent authorities have suggested that the tide of emigration may have set the other way, from America to Asia.

Physical Characteristics.—All the American Indians, savage or semi-civilized, possess the same characteristics. All have the same long, lank hair, black as a raven's wing, brown or copper-colored complexion varying to almost white, heavy brows, dull sleepy eyes, seldom expressing any emotion, full and compressed lips, salient and dilated nose. The head is square or rounded, flattened or vertical occiput, with high cheek bones. In demeanor the Indian is haughty, taciturn and stoical.

Wars.—The early history of this country is full of accounts of wars with the savages who have always resisted to their utmost the encroachments of the "pale faces." The most important of these conflicts were The Pequot War (1637); King Philip's War (1675); Wars of the Six Nations; Black Hawk War (1832); and the Seminole War (1835–1839).

Of the more recent conflicts with the red men, was the Modoc War in 1872. The Sioux War broke out in 1876. In 1890–1891, brief troubles again arose between the Sioux and the Government and some severe fighting took place in South Dakota. In 1898 there was an uprising in Minnesota.

The Indians within the United States who are still under tribal organization occupy a peculiar position. They are not, strictly speaking, a part of the body politic, but are regarded as a "domestic dependent nation." They are conceded the right to regulate their domestic affairs, but this right has been restricted in several ways. Well ordered governments have been developed by the tribes formerly known as the Five Civilized Tribes, the Cherokees, Chickasaws, Choctaws, Creeks, and Seminoles. Each has its own executive, legislature, and judiciary. In 1887 Congress passed an act providing that Indians residing on lands allotted to them in severalty should be considered citizens of the United States without being naturalized. This conferred citizenship to about 10,000 Indians, to whom allotments had already been made. By an act passed in 1911, the property of the Five Civilized Tribes was allotted in severalty and the work of distributing the lands and of selling unallotted lands for the benefit of the members of the Cherokee Nation, was practically completed in 1914, and the tribe had ceased to exist as a political unit. The allotment to other tribes also continued in the years following, until they are now practically all citizens. The lands of these tribes are situated chiefly in Oklahoma, and oil and other minerals have been found in such quantities as to make the members of the tribes who are the owners of the land, extremely wealthy. They receive royalties from all oil and other leases granted on their lands. The Indians of these former tribes have reached a comparatively high standard of education. There are about 20,000 enrolled in the public schools of Oklahoma.

Reservations of other tribes of Indians are scattered throughout the country but are chiefly found in the Middle and Far West. Among the most notable of these are the Navajo tribes in New Mexico and Arizona, and the Pueblo-Indian Reservation in New Mexico. There are also reservations in Oregon, Montana and Washington, and other States. In 1920 there were nearly 37,000 Indian farmers who were cultivating over three-quarters of a million acres. There were about 300,000 Indians in the United States in 1920.

INDIANAPOLIS, a city of Indiana, the capital of the State, and the county-seat of Marion co. It is on the White river and is on 16 railroads. It is in the geographical center of the State and is the center of manufacturing in the United States. Its total area is 42 square miles. Pop. (1910) 233,650; (1920) 314,194.

Indianapolis is situated in the midst of a fertile plain, chiefly on the east bank of the river, which is spanned by many bridges. It is pre-eminently an industrial city, because of its geographical location in relation to the general market, its exceptional shipping facilities, and the nearness of the fuel supply. There are approximately 1,000 manufacturing and 2,300 retail concerns. In addition there are over 200 wholesale and jobbing houses with a market extending well over the Central West. An excellent grade of steam coal is obtained from the Indiana coal fields, at an average haul of over 90 miles. Its chief industry is slaughtering and meat packing. Over 3,000,000 head of live stock are received at the Indianapolis stock yards, annually. Other important industries are the man-

ufacture of milling machinery, engines, drugs, automobiles, furniture, and starch.

The city had in 1920, 372 miles of permanently improved streets. There were 161 miles of city electric car lines, operating over double track, with 5¢ fare and universal transfers. There were 429 miles of sewers and 434 miles of water main. It has one of the greatest motor speedways in the United States. Indianapolis is the seat of the following State institutions: the Indiana State Fair, Indiana Institute for the Blind, Indiana School for the Deaf, School of Medicine of Indiana University, Indiana University Extension Center, Indiana Girls' School, Indiana Women's Prison, and the Central Hospital for the Insane. The Central Library building, erected at a cost of from $5,000,000 to $10,000,000, contains nearly 225,000 volumes. There is also an excellent State Library in the State House. There are 73 public school buildings and 3 public high school buildings. 33 of the public schools are equipped with manual training and domestic science. In addition to this there are 17 Catholic parochial grade schools, two academies for young women, and three Catholic high schools for boys. In addition to the State and city schools, there are Butler College, Indiana Central University, College of Music and Fine Arts, and many private schools for boys and girls. The city is well equipped with hospitals, including a City Hospital, Joseph Eastman Hospital, Robert W. Long Hospital, Methodist Episcopal Hospital, St. Francis Hospital, and St. Vincent Hospital. There are many handsome modern office buildings, and many theaters, and apartment houses.

The total assessed value of the city in 1919 was $276,529,380. The tax rate was $2.58 per hundred. The municipal bond of indebtedness was $4,871,960. The value of the city property in 1919 was over $9,000,000.

Indianapolis was settled in 1819 and received its name in 1821. In 1825 it became the capital of the State. Since 1889, when the introduction of natural gas revolutionized manufacturing in Indianapolis, its growth has been remarkably rapid.

INDIAN CAUCASUS. See HINDU KUSH.

INDIAN CORN. See AGRICULTURE; CORN.

INDIAN FIG, a name given to the *Opuntia Tuna* and *O. ficus-indica,* and other species of the cactus family common in the tropical and sub-tropical countries of America, and now naturalized in Africa, Asia, and southern Europe. Their fruit, which is egg-shaped and from 2 to 3 inches long, is cooling and wholesome, and yields a juice used for coloring confectionery.

INDIAN MUTINY, a revolt by the Sepoy soldiers against the British Government in India, begun in 1857. The immediate cause was the arming of the Sepoys with a new rifle whose use compelled them to touch the grease on the cartridge. This being forbidden by their religion, a mutiny began at Meerut, on May 10, and spread to Delhi, Cawnpur, and Lucknow. The garrison at the latter place was relieved by Havelock in September and again by Campbell in November. Delhi was besieged and taken in 1857; Lucknow was finally captured in 1858; and the last resistance was suppressed in the same year. The fearful massacre at Cawnpur, ordered by Nana Sahib, in which many Europeans, including women and children, were killed, took place in July, 1857.

INDIAN OAK, a popular name for the teak tree.

INDIAN OCEAN, a body of water bounded on the W. by Africa, on the N. by Asia, on the E. by Australia and the Australasian Islands. According to modern geographers it is limited to the S. by the 40th parallel of S. latitude, in which region it opens widely into the Southern and Antarctic oceans. It gradually narrows towards the N., and is divided by the Indian peninsula into the Bay of Bengal on the E. and the Arabian Sea on the W., the latter sending N. two arms, the Persian Gulf and the Red Sea. Within these limits the Indian Ocean is estimated to have an area of 17,320,500 square miles.

At the dawn of history the Indian Ocean was known as the Erythræan Sea. Necho, an Egyptian monarch who flourished about 610 B. C., is reported by Herodotus to have sent some of his vessels, manned by Phœnicians, into the Erythræan Sea with orders to return by the S. of Africa and the Pillars of Hercules. From a very early date there was a coasting trade between India and the Persian Gulf, but the voyage of Nearchus, one of Alexander's generals, from the Indus to the Persian Gulf, is the earliest reliable record of these coasts. In 1486 the Portuguese rounded the Cape of Good Hope, and in 1498 Vasco da Gama reached the coasts of India by the same route. In 1521 the one remaining ship of Magellan's squadron crossed the

Southern Indian Ocean in completing the first circumnavigation of the world.

The mean depth of the Indian Ocean is estimated at about 2,300 fathoms, or slightly greater than that of the Atlantic.

The area of land draining into the Indian Ocean is estimated at 6,813,600 square miles, and the annual rainfall on this land is equal to 4,379 cubic miles of water. The rivers flowing from the Asiatic continent are by far the most important, and they carry an immense amount of detrital matter into the Bay of Bengal and Arabian Sea, these forming extensive deposits of blue mud.

The temperature of the surface waters of the Indian Ocean varies much in different parts of the ocean, and at the same place at different times of the year or states of the wind. In tropical regions the temperature usually varies from 70° to 80° F., and the yearly range is only 7° or 8° F.

The temperature of the water at the bottom of the Indian Ocean is very uniform and subject to little, if any, annual variation. In the Bay of Bengal and Arabian Sea temperatures of 33.7° F. 34.2° F. have been recorded at the bottom. The currents of the Indian Ocean are less constant than in the other great oceans, and are largely controlled by the direction and strength of the monsoons. Some of the most characteristic coral atolls and islands are to be found toward the central part of the Indian Ocean, such as the great Maldive group, the Chagos, Diego Garcia, and the Cocos Islands. Christmas Island is an upraised coral formation. St. Paul's, Mauritius, Rodriguez, and others are of volcanic origin, while Madagascar, Ceylon, and Socotra are typical continental islands.

INDIAN RED, a silicate of iron, imported from the Persian Gulf.

INDIAN RESERVATIONS, lands set aside by treaties between the United States and the Indians for the residence of the latter. Up to 1871 these lands were fixed by treaty, but as that to some extent recognized the independence of the Indians all later arrangements have been made by act of Congress. At first the land was given unreservedly to the Indians but since 1887 the policy has been adopted of giving each individual Indian his allotted share of land, making him a citizen. Eventually under this policy the reservations will disappear entirely.

The larger reservations as they existed in 1920 are:

	Acres
Arizona	
Navaho	12,115,283
Hopi	2,472,230
Fort Apache	1,681,920
San Carlos	1,834,240
Minnesota	
Red Lake	543,528
Montana	
Crow	1,836,753
Fort Peck	1,774,967
Blackfeet	959,644
New Mexico	
Mescalero Apache	474,240
Zuñi	315,040
North Dakota	
Standing Rock	1,847,812
Oklahoma	
Choctaw	2,590,043
Wichita	1,511,576
Chickasaw	803,108
Oregon	
Klamath	872,186
South Dakota	
Cheyenne River	2,467,926
Pine Ridge	1,943,121
Rosebud	1,524,210
California	
Mission (28 reserves)	202,216
Colorado	
Fort Hall	447,940
Washington	
Colville	1,297,009
Yakima	837,753

The total acreage given over to Indian reservations in the United States was in 1920, 48,477,216 acres.

INDIAN SHOT, an ornamental plant of the arrow root family found in most tropical countries. The seeds are round, hard, and black, hence the name of Indian shot applied to the plant.

INDIAN SUMMER, the name given to a period of mild summer weather which generally occurs towards the end of autumn in the United States.

INDIAN TERRITORY, formerly a territory of the United States, now incorporated in the State of Oklahoma. It was a part of the Louisiana Purchase and in 1829 was set apart by Congress for the occupation of Indians east of the Mississippi river. The portion of the territory was taken in 1890 to form a part of Oklahoma Territory. Indian Territory then had an area of 31,246 square miles. It was occupied by the Five Civilized Tribes, the Cherokees, Creeks, Seminoles, Choctaws, and Chickasaws. By various enactments of Congress the territory was divided among the individuals of each tribe. An enrollment of the members of the tribe was begun and completed on June 30, 1907. In 1914 the allotments of land were practically completed. The discovery of oil and gas wells within the territory produced great prosperity among the Indians owning these lands which have been leased for operation. The movement for statehood in the territory began in 1892 and was followed by a Constitutional Convention held in 1905. The preference of the inhabitants of the territory was for separate statehood, but Congress, however, preferred to establish a joint state composed of Oklahoma and Indian Territory. The statehood bill was passed by Congress in June, 1906,

and on Nov. 16, 1907, Indian Territory and Oklahoma Territory became the State of Oklahoma. See OKLAHOMA, and INDIANS, AMERICAN.

INDIANA, a State in the North Central Division of the North American Union; bounded by Ohio, Kentucky, Illinois, Michigan, and Lake Michigan; admitted to the Union Dec. 11, 1816; number of counties, 92; capital, Indianapolis; area, 36,350 square miles; pop. (1890) 2,192,404; (1900) 2,516,462; (1910) 2,700,876; (1920) 2,930,390.

Topography.—The surface of the State is generally level or undulating, ranging from 300 to 1,250 feet in altitude. The hills of the Ohio and Wabash river valleys inclose richly wooded bottom lands. The W. portion of the State is mostly prairie lands, interspersed with lakes, wood lands, and swamps. The rivers are mostly affluents of the Ohio and include the Indian Kentucky, Silver, Indian Blue, Big Pigeon, Little Pigeon, and Laughery. The Wabash, rising in Ohio, flows 500 mils through the State, and is navigable for 300 miles. The Maumee is formed in Allen co., by the junction of the St. Joseph's and St. Mary's, and flows N. E. through Ohio, into Lake Erie. The Kankakee flows 100 miles through the State and forms one of the constituents of the Illinois. There are several lakes and large ponds with clear water and sandy shores and bottoms. Beaver Lake, near the Illinois line, once covering an area of 10,000 acres, has been drained nearly dry.

Geology.—Aside from Silurian deposits in the extreme N. W. and S. E. parts of the State, the entire surface is overlaid with Devonian and sub-carboniferous rocks. Three distinct varieties of bituminous coal are found in great abundance and the limestone region in the S. contains many sink holes and caves. The Wyandotte cave in Crawford co. is second only to the Mammoth cave in size. The coal measures cover an area of 6,500 square miles, with a depth of 600 to 800 feet, and present 12 to 14 distinct seams, ranging from 1 to 11 feet in thickness.

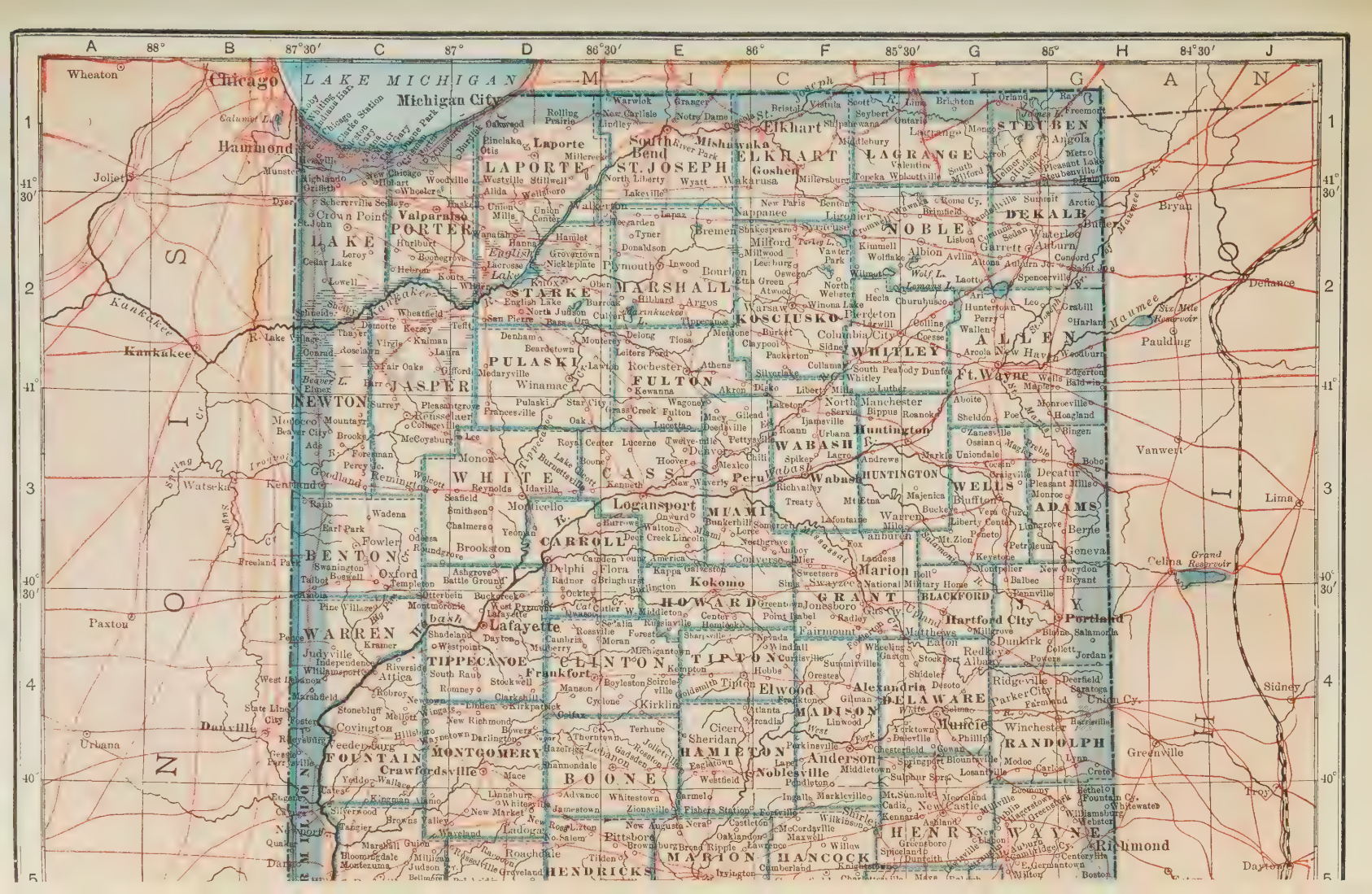
Mineralogy.—The State is rich in mineral resources, especially in coal. Block coal, used in pig iron smelting, is mined in blocks weighing upward of a ton each, and cannel coal and peat are found in abundance. Quarries of building stones cover an area of 200 square miles, adjoining the coal measures. The coal production of the State in 1918 was 27,325,000 tons, a gain of 785,000 tons over the production of 1917. The production of petroleum in 1917 was 759,415 barrels, valued at $1,475,548. Other important mineral products are cement, of which there was produced in 1917, 8,148,678 barrels, valued at $11,084,130; pig iron, the production of which in 1917 was 2,162,872 long tons; clay products; sand, and gravel. Other mineral productions are bog iron, antimony, bismuth, cobalt, ganister, lead, manganese, sulphuret of silver, and salt.

Soil.—The soil varies from a deep black sand to clay loam, and is generally fertile, excepting along the lake front. The river valleys of the Wabash and Whitewater are particularly fertile. The climate is changeable and marked by extremes. Nearly one-eighth of the area is open prairie, and well adapted to agriculture. The trees include the white, red, black, and blue oak, ash, beech, hickory, sycamore, elm, tulip, black walnut, red and sugar maple, tamarack, sumach, dogwood, and wild plum.

Agriculture.—The State is largely engaged in agricultural pursuits. All farm and garden vegetables and fruits are grown, and wheat, corn, oats, tobacco, hemp, flax, maple sugar, maple syrup, sorghum molasses, honey, beeswax, cider, vinegar, hops, and wine are among the varied products. The production and value of the principal crops in 1919 were as follows: Corn, 175,750,000 bushels, valued at $219,688,000; wheat, 46,025,000 bushels, valued at $96,642,000; tobacco, 15,215,000 pounds, valued at $5,316,000; hay, 3,080,000 tons, valued at $66,528,000; potatoes, 4,400,000 bushels, valued at $8,585,000; oats, 60,225,000 bushels, valued at $41,555,000; rye, 5,320,000 bushels, valued at $7,448,000.

Banking.—On Oct. 31, 1919, there were 255 National banks in operation, having $28,641,000 in capital, $26,735,653 in outstanding circulation, and $26,704,030 in United States bonds. There were also 435 State banks, with $16,980,000 capital, and $6,051,000 surplus; 179 private banks, with $2,838,000 capital, and $822,000 surplus; and 162 trust and loan companies, with $16,870,000 capital, and $4,811,000 surplus. In the year ending Sept. 30, 1919, the exchanges at the United States clearing house at Indianapolis aggregated $776,325,000, an increase over the previous year of $13,353,000.

Education.—There were in 1918 706,868 children of school age. There was an enrollment in the schools of 564,152. There were over 20,000 teachers and supervisors. Among the colleges are Indiana University, at Bloomington; Purdue University, at Lafayette; De Pauw University, at Greencastle; University of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ST. JOSEPH
Mishawaka
Elkhart
ELKHART
LAGRANGE
STEUBEN
NOBLE
DEKALB
Angola
Auburn
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CASS
Logansport
MIAMI
WABASH
HUNTINGTON
WELLS
ADAMS
Decatur
Vanwert
Lima
Geneva
Berne
Celina
Grand Reservoir
Monon R.
Wabash R.
Mississinewa R.
Eel R.
Tippecanoe R.
Big Pine Cr.
Sugar Cr.
Spring Cr.
Wildcat Cr.
Watseka
Kentland
Goodland
Remington
Rensselaer
Francesville
Monticello
Brookston
Delphi
Flora
Kokomo
HOWARD
GRANT
BLACKFORD
JAY
Portland
Hartford City
Marion
Converse
Peru
Wabash
Huntington
Warren
Liberty Center
Petroleum
Montpelier
Bryant
Pennville
BENTON
Oxford
Fowler
Earl Park
Freeland Park
Otterbein
Lafayette
WARREN
TIPPECANOE
CLINTON
TIPTON
Frankfort
Elwood
Alexandria
DELAWARE
Muncie
Winchester
RANDOLPH
Ridgeville
Parker City
Dunkirk
Redkey
Portland
Sidney
Greenville
Troy
Dayton
Urbana
Paxton
Dunkirk
Veedersburg
FOUNTAIN
MONTGOMERY
Crawfordsville
BOONE
Noblesville
Anderson
MADISON
HAMILTON
HENRY
WAYNE
Richmond
Centerville
Williamsburg
Webster
Fountain Cy.
Whitewater
Economy
Bethel
Greensfork
Spiceland
Knightstown
Cambridge City
Germantown
Boston
Milton
Hagerstown
Mooreland
New Castle
Kennard
Ashland
Cadiz
Mt. Summit
Sulphur Spgs.
Middletown
Pendleton
Ingalls
Markleville
Fishers Station
Zionsville
Whitestown
Carmel
Westfield
Sheridan
Cicero
Arcadia
Atlanta
Linwood
Perkinsville
Chesterfield
Elwood
Frankton
Summitville
Orestes
Shideler
Gilman
Yorktown
Daleville
Phillips
Springport
Blountsville
Modoc
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Keystone
Mt. Zion
Petroleum
Montpelier
Balbec
Bryant
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Gas City
Fairmount
Marion
National Military Home
Swayzee
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INDIANA
SCALE OF STATUTE MILES
0 10 20 30 40 50
SCALE OF KILOMETERS
0 10 20 30 40 50 60 70 80
County Towns
Railroads
Canals
Longitude 86° 30′ West
from 86° Greenwich
PARKE
PUTNAM
MORGAN
JOHNSON
SHELBY
FAYETTE
RUSH
FRANKLIN
UNION
CLAY
OWEN
MONROE
BROWN
BARTHOLOMEW
DECATUR
RIPLEY
DEARBORN
SULLIVAN
GREENE
LAWRENCE
JACKSON
JENNINGS
SWITZERLAND
OHIO
MARTIN
DAVIESS
KNOX
WASHINGTON
ORANGE
JEFFERSON
SCOTT
CLARK
FLOYD
PIKE
DUBOIS
GIBSON
CRAWFORD
HARRISON
WARRICK
SPENCER
PERRY
POSEY
VANDERBURG
Indianapolis
Terre Haute
Evansville
Vincennes
Bloomington
Bedford
Madison
Jeffersonville
New Albany
Louisville
Newport
Covington
Cincinnati
Lawrenceburg
Aurora
Rising Sun
Greensburg
Connersville
Shelbyville
Greencastle
Crawfordsville
Lafayette
Logansport
Peru
Kokomo
Muncie
Richmond
Hartford City
Portland
Decatur
Columbus
Seymour
North Vernon
Versailles
Batesville
Rushville
Knightstown
Brookville
Liberty
Connersville
Centerville
Hagerstown
Cambridge City
Dublin
Greenfield
Noblesville
Tipton
Kokomo
Marion
Wabash
Huntington
Fort Wayne
Auburn
Kendallville
Angola
Goshen
Elkhart
South Bend
La Porte
Michigan City
Gary
Hammond
Whiting
East Chicago
Valparaiso
Crown Point
Rensselaer
Lowell
Hobart
Merrillville
Chesterton
Portage
Michigan City
Laporte
Plymouth
Knox
Winamac
Monticello
Rensselaer
Francesville
Medaryville
Wheatfield
Kentland
Brook
Morocco
Goodland
Fowler
Attica
Covington
Veedersburg
Williamsport
Rockville
Crawfordsville
Waveland
Greencastle
Brazil
Clinton
Terre Haute
West Terre Haute
Sullivan
Shelburn
Farmersburg
Fairbanks
Merom
New Lebanon
Sullivan
Graysville
Midland
Worthington
Jasonville
Newark
Clay City
Brazil
Centerpoint
Riley
Cory
Saline City
Staunton
Ashersville
Selbyville
Burnett
Knightsville
Harmon
Carbon
Coal Bluff
Fontanet
Universal
Sandford
Shakers
New Goshen
Rosedale
Jessup
Catlin
Mecca
Parke
Bridgeton
Rockville
Montezuma
Alamo
Roachdale
Greencastle
Fillmore
Limedale
Putnamville
Cloverdale
Eminence
Centerton
Mooresville
Monrovia
Hall
Brooklyn
Camby
Stilesville
Waverly
Needham
Bargersville
Franklin
Trafalgar
Edinburg
Nineveh
Whiteland
Greenwood
Southport
Acton
Fountaintown
Morristown
Carthage
Sexton
Benonville
Kitchel
Brownsville
Cottage Grove
College Cor.
Alpine
Everton
Orange
Glenwood
Famouth
Laurel
Fairfield
Bath
Milroy
Clarksburg
Stipps Hill
Hamburg
Mt. Carmel
Hamilton
Oldenburg
Cedar Grove
New Trenton
South Gate
Batesville
Morris
Sunman
Napoleon
Weisburg
Milan
Moores Hill
Guilford
Kelso
Turkville
St. Leon
Cold Spr.
Cochran
Ditsboro
Farmers Retreat
Friendship
Benham
Gross Plains
Bear Branch
Bascom
Sugar Branch
E. Enterprise
Patriot
Florence
Warsaw
Carrollton
Williamstown
Bedford
Marblehill
New Washington
Bethlehem
Lagrange
Madison
Brookburg
Vevay
Moorefield
Markland
Canaan
Barbersville
Dupont
Wirt
Paris
Crossing
Commiskey
Lovett
Benington
Cross Plains
Beat

Notre Dame, at Notre Dame; and Franklin College, at Franklin.

Churches.—The strongest denominations in the State of Indiana are the Methodist Episcopal, Roman Catholic, Disciples of Christ, Regular Baptist, United Brethren, Presbyterian, Friends, and Lutheran.

Railroads.—The total railway mileage in the State in 1919 was 7,808. There has been practically no new construction in recent years.

Charities and Corrections.—The principal charitable and correctional institutions are Central Hospital for the Insane, Indianapolis; School for the Blind, Indianapolis; Boys' School, Plainfield; Northern Hospital for the Insane, Logansport; Eastern Hospital for the Insane, Richmond; Southern Hospital for the Insane, Evansville; Southeastern Hospital for the Insane, North Madison; Hospital for Treatment of Tuberculosis, Rockville; State Farm, Putnamville. There was paid for the support of the State institutions in 1918, about $3,600,000.

State Government.—The governor is elected for a term of four years, and receives a salary of $8,000 per annum. Legislative sessions are held biennially, and are limited to 60 days each. The legislature has 50 members in the Senate, and 100 in the House. There are 13 representatives in Congress. In 1920 the government was Republican.

History.—Indiana was part of the territory ceded to Great Britain, in 1763, by France. Early settlements had been made by the French at Corydon and Vincennes in 1702. After the American Revolution the Indians gave considerable trouble to the settlers, but after several years were conquered and brought to peaceful terms by Anthony Wayne. They became troublesome again in 1810, and in 1811 Gov. William Henry Harrison was appointed commander of a force of regulars and militia for the purpose of subduing them. On Nov. 7, 1811, he met and defeated the Indians under Tecumseh, at Tippecanoe, on the Wabash. During the War of 1812, the Indians under British command were again troublesome, but were soon subdued. In 1813 Corydon was made the capital, in 1816 Indiana was admitted to the Union, and in 1825 the capital was removed to Indianapolis. The present constitution was adopted in 1851, and in 1853 a free banking law was passed.

INDIANA, UNIVERSITY OF, a coeducational State institution in Bloomington, Ind.; founded in 1820; reported at the close of 1919: Professors and instructors, 150; students, 3,700; volumes in the library, 100,000; president, William L. Bryan, LL.D.

INDIVIDUALISM, the system of thought which treats the well-being of the individual as the true aim of the state, and his development as the goal of ethics and religion. In political thought a person may be an anarchist, a believer in unrestricted individual action, or like Hobbes hold that an individual's interest is best served by a despotic state. Usually an individualist holds to the belief of Locke and Jefferson that only those restrictions on the individual's behavior are justified which are essential to protect the welfare of other citizens of the state. This line, however, can be, and in the history of political science has been, drawn so as to place very serious restrictions on individual action. In economics individualism means what is generally termed the *laissez faire* policy, viz. the State to keep hands off the economic machinery. Free and unrestricted competition is to prevail, no minimum wage laws, no restrictions on the hours of labor or conditions of labor, no price fixing by the state, compensation being solely a matter between the parties involved. This system was largely held to in England and the United States during the early portion of the nineteenth century, but it resulted in frightful loss of life among mine workers and factory operatives, and now few individuals are extreme enough to demand its application.

Individualism in ethics and religion would make a man's conscience the sole arbiter of his actions. Protestant theory started out on this basis, taking its cue from Luther's famous phrase, but soon discovered its impracticability in the excesses which it brought forth. Now every form of religious denomination, except perhaps the Society of Friends, demands the adherence of the individuals to some fixed standard of belief and conduct.

INDICAN, in chemistry, $C_{26}H_{31}NO_{21}$, a clear brown syrup of bitter and repulsive taste, existing in many species of plants, but especially in Dyer's wood (*Isatis tinctoria*). Indican is sometimes found in the urine of man, both in health and disease. It has also been found in the blood of man and in the blood and urine of the ox.

INDICATOR, in chemistry, a reagent used in volumetric analysis to indicate, by change of color, the exact point at which the precipitation of any chemical body from a solution is completed. Indi-

cators are also used to determine, by change of color, the precise point at which a liquid ceases to be either acid or alkaline. The chief reagents used as indicators are yellow potassic chromate, potassic ferrocyanide, indigo, carmine, litmus, turmeric, Porrier's orange, tropœolin, phenolphthalein, eosin, rosalic acid, etc.

An instrument for measuring the horse power of a steam engine.

Optics.—A finger working in the field of a microscope to point out a special object within the field of view.

Telegraphy.—The dial and mechanism of a dial telegraph. The face has the letters and figures arranged in two concentric circles. The motion of the hand is continuous in one direction advancing one letter at each closing of the circuit. The movement is effected by clockwork driving a scapewheel, the teeth of which are alternately engaged and released upon opening and closing the circuit, by means of a pawl operated intermediately from the armature of the electro-magnets.

INDICTION, a declaration or imposition of a tax, an impost, or a prohibition of grave character. The "Cycle of Indiction" is a period of 15 years, not founded on any astronomical occurrence, but fixed first by Constantine the Great as a fiscal arrangement. It began on Jan. 1, A. D. 313. The Popes adopted it in the year 1582, when the calendar was reformed, that year being the 10th of the indiction. The year of the indiction corresponding to any year of our era is thus found: Add 3 to the date, divide the sum by 15, and the remainder is the year of the indiction, the remainder 0 indicating the 15th of the cycle. Thus $\frac{1884+3}{15} = 125$, with a remainder of 12. Twelve, therefore, is the indiction of that year. There are three other indictions besides Constantine's: the Cæsarean or Imperial, the Roman or Pontifical, and that of the Parliaments of France.

INDICTMENT, in law, the act of indicting or charging a person with a crime or misdemeanor; the state of being indicted; a formal charge against a person or persons for a crime or misdemeanor. Also a written accusation of one or more persons of a crime or misdemeanor, preferred to and presented on oath by a grand jury.

INDIES, the name given by Columbus to his first discoveries in America, which he thought at the time were a part of India. These lands were afterward termed the West Indies, which name the islands still bear.

INDIES, EAST, a collective name vaguely applied to Hindustan, Farther India and the Indian Archipelago. See HINDUSTAN; INDIA.

INDIES, WEST. See INDIES.

INDIGESTION, dyspepsia, difficulty of digestion, with slowness and long retention of the food in the stomach, great distress after eating, uneasiness at the pit of the stomach, fetid eructations, and unaltered ingesta in the stools. Digestion is much retarded, deficiency and abnormality of the gastric juice being a common occurrence.

INDIGO, a vegetable dyestuff, yielding a beautiful and very durable blue dye. Many tropical and sub-tropical plants contain a substance, probably a glucoside, which, on being extracted and allowed to ferment, produces impure indigo. The plants from which it is chiefly obtained are the various species of *Indigofera, Isatis tinctoria, Polygonum tinctorium,* etc. Commercial indigo is by no means pure indigo-blue; it contains indigo-gluten, indigo-brown, and indigo-red, together with insoluble impurities. Indigo prepared in Java by Sayer's process contains from 66 to 71 per cent. of indigo-blue, and only 2½ per cent. of ash, while ordinary commercial indigo seldom contains more than 65 per cent. of indigo-blue, with not less than 15 per cent. of ash. Indigo is tasteless, odorless, and of an intense blue color, passing into purple.

INDIGO BIRD, a North American bird of the finch family, a native of the United States, as far N. as the Missouri, which it visits in summer, and of Central America, where it spends the winter. It is about 5½ inches in length, of a beautiful blue color.

INDIGO GREEN, a green obtained from indigo by adding potash to an alcoholic solution of an alkaline hyposulphate of indigo.

INDIGO-RED, one of the coloring matters found in commercial indigo. It may be obtained by exhausting indigo with hydrochloric sulphuric acid then with a strong caustic alkaline lye. Indigo-red may also be obtained from the fresh leaves of *Polygonum tinctorium.*

INDIGO-WHITE, in chemistry, $C_{16}H_{12}N_2O_2$, a white powder introduced by the action of reducing agents on pure indigo-blue. It may be prepared by digesting for 24 hours a mixture of indigotine, hy-

drate of calcium, sulphate of iron, and water in a closed flask filled with hydrogen. The clear solution is then decanted by means of a siphon filled with hydrogen into a vessel containing hydrochloric acid and ammonium sulphite. The precipitate of indigo-white which is formed is filtered and dried at 100°, in a stream of hydrogen. Pure indigo-white is a white powder with a silky luster.

INDIGO-YELLOW, a clear yellow substance, obtained by heating hypo-sulphindigotate of calcium with limewater in contact with air.

INDIGOTIN, in chemistry, $C_{16}H_5NO_2$ (Indigo-blue), the pure blue coloring matter of indigo. It is obtained from commercial indigo, by reducing it to indigo-white, by means of reducing agents, such as ferrous salts, grape sugar, etc., the resulting yellow solution of the indigo-white metallic compound, on exposure to the air, depositing indigo-blue in small crystals.

INDIRETIN (in-dir'rit-in), in chemistry, $C_{18}H_{17}NO_5$, a dark-brown shining resin, produced, together with other bodies, by heating indican with dilute sulphuric acid.

INDIRUBIN (in-dir-ūb'in), in chemistry, C_8H_5NO, a crystalline compound, obtained by the decomposition of indican by means of an acid, but more abundantly by treating Indian wood leaves in an alkaline solution of stannous chloride, the liquid depositing indirubin on exposure to the air. Indirubin is isomeric with indigo-blue, and resembles indigo-root in many of its properties.

INDIUM, a very rare metal, occurring in minute quantities in zinc ores. It was discovered by F. Reich and Th. Richter, in 1863, in the zinc-blende of Freiburg. The metal itself is of a lead-gray color, soft, malleable, fusible, but not very volatile.

INDO-EUROPEAN LANGUAGES, also called ARYAN or INDO-GERMANIC, the most important of the great families into which human speech has been divided, spoken by various peoples in Asia and Europe. The chief branches of this family are the Teutonic or Germanic, including English, German, Dutch, Danish, Swedish, Icelandic, and the extinct Gothic; the Slavonic (Polish, Russian, Bohemian); the Lithuanian; the Celtic (Welsh, Irish, Gaelic, Breton); the Latin or Italic, and the Romance tongues descended from it (French, Italian, Spanish, Portuguese); the Greek, the Armenian, the Persian, and the Sanskrit. All these tongues are regarded as being descended from a common ancestral tongue or parent speech, spoken at some remote period in Central Asia.

INDORE, a Mahratta principality of India, comprising the territories of the Holkar dynasty, covers an area of 9,500 square miles. The bulk of it lies between Sindhia's dominions on the N. and Bombay Presidency on the S., its length from N. to S. being 120 miles, and its breadth 82. It is traversed from E. to W. by the Nerbudda, which almost bisects it; by the Vindhya Mountains, and by the Satpura Mountains. Principal products, poppy, cotton, tobacco, wheat, rice, millets, etc.; principal industries, cotton and opium manufacture. Pop. about 1,100,000. The Vindhyas and Satpuras have from time immemorial been the home of the Bhils, the wildest of the aboriginal tribes in India. The State was founded about the middle of the 18th century by Malhar Rao, a soldier of fortune, who served the Peshwa. In 1818 the ruler of the Holkar dominions was reduced to the position of a feudatory prince of the British Indian empire.

INDORE, the capital of the Maharaja Holkar's dominions. Pop. about 100,000, mostly Hindus. During the revolt of 1857, though the maharaja remained faithful to the British government, his troops mutinied in July, holding their prince a prisoner in his own palace, and butchering many Europeans in cold blood. The town dates only from 1770.

INDORSEMENT, the term generally used to denote the writing of the name of the holder on the back of a bill of exchange or promissory note, on transferring or assigning it to another. Signing the name "A. B." alone is a blank indorsement. When personal liability is to be avoided the words "without recourse" are added, and in this case no demand can come back on the indorser, who would otherwise be liable. The word indorsement is also frequently used to denote any matters written or indorsed on the back of writs or deeds, as indorsements on declarations, on writs of summons, etc.

INDRE (*ang'*dr), a department of France lying S. of the department of Loir-et-Cher; area, 2,679 square miles. It is watered by the Indre, the Creuse, and its tributary, the Anglin. The surface is generally flat, and the land fertile, producing large crops of wheat and barley. The two principal resources of the department, however, are its vineyards and its flocks. Chief towns: Châteauroux, the capital, Le Blanc, Issoudun, and La Châtre. Pop. about 300,000.

INDRE-ET-LOIRE (*ang*-drāl-wär'), a department of France, lying N. W. of the department of Indre. It is watered by the Loire, and by its tributaries, the Cher, the Indre, and the Vienne, all of them navigable. Of the products, which include an abundant yield of the ordinary bread stuffs, wine is the most important. Chief towns: Tours, the capital, Chinon, and Loches. Pop. about 350,000.

INDUCED CURRENTS, electric currents developed in conductors in proximity to other conductors traversed by intermittent or fluctuating currents; also, electric currents developed in conductors moving in the field of a magnet, or in conductors within the field of a moving magnet.

INDUCTION, the act of inducting or bringing in; introduction; a bringing in or putting into an office.

In electricity, the action which electrified bodies exert at a distance on bodies in a natural state. An insulated conductor, charged with either kind of electricity, so acts on bodies in a natural state placed near it as to decompose the neutral fluid, attracting the opposite kind of electricity, and repelling the same kind.

In logic and philosophy, Whately (Logic, bk. iv., ch. i., §1) notes the ambiguity of this word, it being employed (a) to designate the process of investigation and collecting facts; and (b) the deducing of an inference from those facts. It is also loosely used in the sense of an inference from observed facts.

In magnetism, the action which magnetized bodies exert at a distance on bodies in a natural state.

In natural science, a consequence, inference, or general principle drawn from a number of particular facts or phenomena. As Whewell says the inductive philosophy ascends from particular facts to general principles, and then descends again from these general principles to particular applications.

Coefficient of magnetic induction is a coefficient expressing the ratio of the intensity of the induced magnetization to the intensity of the field.

INDUCTION BALANCE, a modification of the microphone. Its object is to measure the differences in the molecular constitution of metallic bodies. A milligram of copper on an iron wire finer than the human hair has been detected, and its exact value ascertained, by this delicate instrument. In its present form it consists of two flat coils, about 4 inches in diameter and ½ inch in thickness, of insulated copper wire, battery, condenser, circuit, and telephone.

INDUCTION COIL, in electrical machinery, a contrivance which consists essentially of two separate coils of insulated wire wound round a soft iron core.

INDULGENCE, in Roman Catholic theology, a remission of the punishment which is still due to sin after sacramental absolution, the remission being valid in the court of conscience and before God, and being made by an application of the treasure of the Church on the part of a lawful superior. Indulgence may be either (1) Plenary, remitting the whole, or (2) Partial, remitting a portion of the temporal punishment due to sin. The former are granted by the Pope to the whole Church; the latter by primates, metropolitans, and bishops within their respective jurisdiction. The Council of Trent ordains that indulgences must be given everywhere gratis.

Canonical penances in the early Church were very severe, and, in times of persecution, it was the custom of martyrs awaiting death to give weaker brethren, who had lapsed or been guilty of other grievous sin, a letter (*libellus pacis*) to the bishop, asking that he might be restored. Urban II. granted plenary indulgence in the Council of Clermont to those who should go at their own expense on the then contemplated Crusade. In the 9th century Pascal I. and John VIII. bestowed indulgences on the souls of those who had died fighting for the Church. In 1300 they were sold over Europe in connection with the Jubilee. Early in the 16th century they were farmed out, the farmers employing agents to retail them to the people at a profit. These subordinates puffed their wares without much attention to theological precision. One of these, John Tetzel, a Dominican friar, so filled Luther with indignation as to lead him, on Oct. 31, 1517, to affix theses on that and cognate subjects to the door of the Cathedral Church of Wittenberg and thus commence the Reformation.

INDULIN, a term applied commercially to a series of aniline colors, obtained by treating the bases of magenta refuse with aniline and acetic acid. There are two kinds of indulin, the one soluble in alcohol, the other in water. Spirit-soluble indulin dyes wool, silk, and cotton different shades of blue or gray. The water-soluble indulins dye fabrics light and dark shades of gray, even approaching black; but the blacks are not satisfactory either in color or durability.

INDUS, one of the great rivers of Asia, which rises in Tibet, on the N. of the mountain Kailas, celebrated in the mythology of the Hindus. After passing the city of Lahdack, in Kashmir, it takes a S. W. course, and forcing its way through the mountains called the Hindu Kush enters Hindustan in about lat. 35° N. Its course is generally to the S. Below its confluence with the Punjnud. the Indus, instead of increasing in volume, becomes gradually less. Its basin is here narrow, so that the affluents are insignificant, while its arid, sandy nature causes the river to suffer from absorption and evaporation. At Miani, 8 miles N. of Haidarabad, commences the Delta proper, which measures 75 miles upward, by 130 along the coast of the Arabian Sea. The area of the drainage —its extreme dimensions being respectively 900 miles and 750—has perhaps been over-estimated at 488,000 square miles. The value of the Indus as a route of traffic is less than that of most other streams of equal magnitude. In the winter, one only of its numerous outlets is at all available for communication with the sea. The Indus abounds with fish of excellent quality, and is infested by crocodiles.

INDUS, in astronomy, a constellation of the Southern Hemisphere. It lies to the south of Sagittarius, being between that constellation and the South pole. It was formed and named by Bayer. Its largest star is one of the third magnitude.

INDUSTRIAL AND PROVIDENT SOCIETIES, societies that carry on some trade for the mutual benefit of the members. In Great Britain various acts have been passed for the regulation of industrial societies, the most important being in 1876, amending and consolidating all previous acts. The societies which may be registered under this act are societies for carrying on any labor, trade, or handicraft, whether wholesale or retail, of which societies no member other than a society registered under this act shall have or claim an interest in the funds over $1,000. No society can be registered which has a membership of less than seven persons; and every society must have a registered office; must publish its name outside the office and elsewhere; must submit its accounts to an annual public audit; must send annual returns to the registrar, etc.

INDUSTRIAL MANAGEMENT, a term used to cover the many systems of industrial operation and control which have developed and increased in number with great rapidity in recent years. Included in this term are purchasing systems, store management, balance of stores, record systems, studies of interior transportation, routing, factory heating, lighting and ventilating, personnel and employment work, industrial psychological tests, employees' welfare work, motion and time studies, cost accounting, product design, production control, and wage and bonus systems. Modern industry has in many cases by its rapid growth far outstripped the management's methods of controlling it, and the development of these many systems is merely another step in the evolution of modern industry.

Although some preliminary work had been done by F. A. Halsey, who sponsored a premium system, by Slater Lewis, who published "The Commercial Organization of Factories" in 1896, and by A. H. Church, the real credit for the early development of this branch of engineering (as it is now generally conceded to be) should go to Dr. Frederick W. Taylor, of Philadelphia, former president of the American Society of Mechanical Engineers, whose paper on "Shop Management" in 1903, and book on "Scientific Management" are the foundation upon which much of this modern profession is built. Some of the principles of the Taylor System are the analysis of the fundamental processes which go to make up each operation, a study of those processes, and as a result of that study, the determination of the best way of doing each particular task. By the application of these principles Dr. Taylor was able in many processes to secure a marked increase in production without greatly increased effort on the part of the operative, and, by a skillfully devised task and bonus system, the operatives were given a share of the profits resulting from this increased production.

It has been felt that one weak point in the work of this pioneer was his complete neglect of the human factor, and that he unsuccessfully attempted to standardize human beings. Various disciples and followers of Dr. Taylor have of recent years contributed much to the advancement of the work. Galbraith has done much work on motion and time study, and has written extensively on the subject, as has Emerson on "Efficiency." Dr. Hollis Godfrey, who was personally associated with Dr. Taylor, has done valuable work in the lines of planning of work and the development of control systems, but his particular contribution has been in the development of a method of training the teachers of the workmen, "management education," thereby estab-

lishing a connecting link between the management group and the workers, the lack of which contact has been the cause of the downfall of many plans of industrial management.

Although much quackery has been practiced under the colors of scientific and industrial management, there can be no question of the benefit, to almost any industry, of the installation of a complete stores and purchasing system, and of having the work move through the factory by the shortest route, by having planned synchronous assemblies of all parts going to make the finished product, and of a complete control over and exact knowledge of every step in the process, and of having them so expressed that they may be imparted to the workers.

INDUSTRIAL RECONSTRUCTION. Reconstruction has been spoken of as that period of change from an equilibrium of effective war to an equilibrium of effective peace. Reconstruction could take the form of a slow evolution, a panic, or even a revolution. The United States, of all the great nations engaged in the World War, is the only one which has not a government reconstruction commission, the duties of which are the establishment of a policy, industrial, commercial, and political, for the trying after-war times, although the plans for such a commission had been made by members of the Advisory Commission of the Council of National Defense and were about to be put in operation when the sudden cessation of hostilities directed all government energies to other channels.

Because of increased output during the war, the change back to normal production in most factories has been accomplished under difficulties. In the absence of any government agency for this work, various private organizations have given thought to the problems, among them being the Chamber of Commerce of the United States and the National Municipal League. The one outstanding feature is the universal recommendation of the maintenance of the increased cooperation between capital and labor.

Among the plans of other countries, the reconstruction demands of the British Labor Party are most interesting, the features of their program being minimum wage, plans for the prevention of unemployment, democratic control of industry, improved housing facilities for workmen, and a marked increase in the age limit of compulsory education.

INDUSTRIAL WORKERS OF THE WORLD, a radical labor organization representing a theory of organization different from and opposed to that of crafts unionism, generally described as "industrial unionism." The organization, familiarly known as the I. W. W., is of recent origin, having been organized in Chicago, in 1904, by Thomas J. Haggerty and Clarence Smith, the former editor of the official organ of the American Labor Union, and the latter its secretary-treasurer. In the following year a convention of the new organization was held, in Chicago, which was attended by delegates representing about 40,000 rank and file. The membership later increased to about 50,000, but seems never to have grown beyond that strength.

The idea behind the I. W. W. is that labor should be organized into one broad organization, regardless of trades or crafts, with a low and uniform initiation fee. "One big union," is the slogan by which this principle is expressed. The contention of the leaders is that crafts organization leads to corruption and divides labor into countless small groups, each with a separate and selfish interest. Aside from this, the I. W. W. has aims quite distinct from those of the crafts unions. While it seeks to raise the wages of its members, this is considered only an incidental object, the main purpose being to form the basis of an industrial democracy, in which the workers shall take over control of industry and control it themselves, the workers of each industry running their own affairs. Unlike the political socialist parties, however, the I. W. W. does not believe that this may be accomplished through political action, but through "industrial action." By this they mean that the capitalists will be finally ousted from control by continuous harrying on the part of the organized workers; by a continuous succession of strikes and by various forms of sabotage, all to finally culminate in the great general strike which shall usher in the social revolution. In this respect the program of the I. W. W. comes very close to the syndicalism of European countries.

Very few skilled workers have so far affiliated themselves with the I. W. W., the majority of its members being the poorer paid and unskilled workers in the textile industry, and that migratory class of workers popularly known as "hoboes," who follow the harvesting season in the W. from S. to N., and who, during the winter, are largely found in the lumber camps.

The I. W. W. has precipitated several large strikes, notably those in Lawrence, Mass., and that of the silk workers, in Paterson, N. J., in 1913. Its most prominent leaders are Elizabeth Gurley

Flynn, William Haywood, and Carlo Tresca.

INDY, PAUL MARIE THÉODORE VINCENT D', a French composer and pianist. Born in Paris in 1851, at the age of fourteen he was a master of the piano. After the Franco-Prussian War in which he served, he became secretary of the Société Nationale de Musique, while its president was the famous musician César Franck. When the latter died in 1890 D'Indy became president. In 1906 he made a tour of the United States, conducting his own works with the Boston Symphony Orchestra. Although he has written two or three operas his best compositions have been for instrumental music. He has also written biographies and books on musical instruction.

INERTIA (in-er'shē-ä), the incapability of matter to change its state, whether that be one of motion or rest. If in motion, it will continue so forever unless some counteractive force, like that of gravity, act upon it. If at rest, it will ever remain so unless a counteractive impulse set it in motion. The resistance which, especially at first, it gives to such a force operating to move it is called *vis inertiæ*—the power of inertia.

INERTIA, CENTER OF. See Center.

INFALLIBILITY, a quality or state of freedom or exemption from error.

Papal infallibility, a claim defined on July 18, 1870, in the Œcumenical Council, held in the Vatican under the presidency of Pope Pius IX.

"We teach and define that it is a dogma divinely revealed that the Roman pontiff, when he speaks *ex cathedrâ*, that is, when in discharge of the office of pastor and doctor of all Christians, by virtue of his supreme apostolic authority he defines a doctrine regarding faith or morals to be held by the Universal Church, by the divine assistance promised to him in blessed Peter, is possessed of that infallibility with which the divine Redeemer willed that His Church should be endowed for defining doctrine regarding faith or morals; and that therefore such definitions of the Roman pontiff are irreformable."

Till the decision of the Vatican Council in favor of the Pope's infallibility this opinion, though for centuries it had had numerous advocates, especially in Italy, had never been authoritatively decided. When it ceased to be an open question, some German scholars, of whom Professor Döllinger, of Munich, was the most noted, seceded from the Roman Church, and in September, 1871, took the name of Old Catholics.

INFANT MORTALITY, one of those social problems which has troubled humanitarians for the past century, and the statesmen in those countries where the birth rate now tends to drop below the death rate. So far as records show, back to the most ancient times, infant mortality has always been very heavy, which, indeed, is true of all animal life. For centuries this was regarded as an inevitable natural incident, not without its beneficent aspect, since it was believed that only the unfit failed to survive. After the industrial revolution, caused by the invention of steam driven machinery, which brought about our modern factory system of industry, with its consequent congregation of great numbers of poor people in populous centers, infant mortality tended to increase at a prodigious rate. Then, about a hundred years ago, sociologists turned their attention to this phenomenon, and began to investigate into causes.

Careful study then brought out the fact that it was not by any means only the unfit who died, or the better individuals, physically or morally, that survived. On the contrary, it was found that often it was the children of the better people who died, because they were least adaptable to the deplorable conditions attending the poverty and congestion of the big cities. As an instance, careful investigation proved that the poorer class people of London were gradually becoming stunted of stature, as compared to the same class of people in the rural districts.

As a result of these many years of close study of causes and effects, it is known that ignorance most of all is the cause of the heavy death rate of infants, especially ignorance of hygiene and proper diet. The country mother seldom fails to be able to nurse her children till they are past the period of the most danger, but the mother who lives in the penury of an industrial center, and on account of poor food and having to work in a factory, is seldom able to do so. Improper substitutes for mother's milk is, therefore, one of the chief causes of infant mortality. This was proven no longer ago than in 1919, when, through an investigation in Saginaw, Mich., it was discovered that of every thousand mothers who worked for a living, 132 lost a child, whereas of an equal number of mothers who did not work, but stayed at home to care for their children, only 78 had lost a child. Another important cause of infant mortality is the impurity

of the milk distributed in many large cities, a fact which has caused a great deal of emphasis to be placed on a pure milk supply by municipalities.

Another fact proven by the collection of statistics is that one-fifth of all deaths are those of children less than one year of age, while one-fourth of all deaths are those of children under two years of age. Also, it is shown that male children are the most delicate, the death rate among them being from 16 to 30 per cent. higher than among female children.

INFANTA, a title given to princesses of the Spanish and Portuguese "blood royal," other than the eldest daughter when heiress apparent to the throne; as, the Infanta Doña Luisa.

INFANTE, the title given in Spain and Portugal to the princes of the royal family, the corresponding title of Infanta being given to the princesses. Since 1388, however, the heir apparent to the throne in Spain has been styled the Prince of Asturias.

INFANTICIDE, the murder of an infant born alive; the killing of a young or newly-born child. The practice of destroying a portion of the offspring—in the majority of cases, the female children—among certain nations or tribes, appeared in the earliest times, and still lingers among some undeveloped races. Lubbock thus accounts for female infanticide: "Girls ate, and did not hunt. They weakened their mothers when young, and when grown up were a temptation to surrounding tribes"; but declines to accept the practice "as the true cause of exogamy." In Sparta it was used as one means of securing what Spencer calls the "survival of the fittest," and was defended by Plato and Aristotle.

The murder by high caste Rajpoots in India of their female children, once most extensive, arose from pride of caste. Public opinion requiring the father to expend an extravagant sum on his daughter's marriage and dowry if she lived, he considered it more economic to have her put to death in infancy. To British remonstrance the answer was, "Pay our daughters' marriage portions, and they shall live." The government took a different method—it imposed on a father sanctioning the murder of his infant child an enormous fine, and the practice soon ceased.

Till lately some of the aboriginal tribes, especially the Khoonds, sacrificed children as votive offerings to the Earth-goddess. The Anglo-Indian government was for a long time unable to put down the practice, but the persistent kidnapping of native children from British-Indian soil having furnished a *casus belli*, war was declared against the Khoonds, who by the treaty of peace were required to give up female infanticide.

INFANTILE PARALYSIS. See POLIOMYELITIS.

INFANTRY, foot soldiers armed with rifle and bayonet. In Europe the infantry is divided into infantry of the line, light infantry, and rifles; but practically no distinction, except that the latter have a lower standard, now exists between them. Formerly the flank companies of each line battalion were, respectively, "grenadier" and "light" companies, and the deployment of the lines or the advance of the columns in battle were either covered by these companies, or by separate light infantry regiments, which were extended as skirmishers. These were either called in when the masses of troops advanced, or, halting, let them pass through. They only prepared the way for the main attack. With the introduction of long range fire, the attack by lines or columns became too dangerous; the former from their slowness, the latter from their denseness. The infantry could no longer advance covered by a weak screen of skirmishers. Battalions, therefore, formed for attack with two companies firing, two supporting, and four in local reserve, the whole working on a narrow front; and, finally, the company in Germany, and the double company in England, formed the fighting tactical unit, and was distributed in a similar manner. But the skirmishers no longer merely cover the advance of troops in rear. They form the fighting-line themselves, and reinforced as loss occurs, and strengthened finally by the local reserve, they break down the defense first with preponderating fire, and then with the bayonet. Ancient nations largely depended in battle on their infantry. Then foot soldiers became less employed, the use of cavalry being one feature of the age of chivalry. The formation by Louis VI., of France (1108–1137), of the communal militia, followed by similar action on the part of Frederick I., the Emperor of Germany (1152–1190), and Henry II., of England (1154–1189), again brought infantry into note and they have held the first place in battles ever since. It was especially the case during the European War of 1914–18. Cavalry were only employed in the first months of the war to any extent, but were effective during the great German retreat in 1918.

INFANT SCHOOLS, a means of educating very young children. Oberlin may be regarded as the founder of infant schools. He appointed women in his own parish to assemble the little children between the ages of 2 and 6, to interest them by conversation, pictures, and maps, and to teach them to read and to sew. The education and training of young children were matters of great interest and study to Pestalozzi. The most successful system of educating quite young children is the KINDERGARTEN (*q. v.*).

INFECTION, a term which has been vaguely used for the contamination of the human body by morbific particles, whether there has or has not been contact with a person similarly affected, but more specifically applied to the contamination of the atmosphere or water by such agency, and through them of the human body.

INFEFTMENT, a Scotch law term, used to denote the symbolical giving possession of land, which was the completion of the title, the mere conveyance not being enough.

INFERIOR PLANET, a planet whose orbit lies within that of the earth. Mercury and Venus are the inferior planets.

INFERNAL, pertaining to the lower regions or regions of the dead, the Hades or Tartarus of the ancient.

INFERNAL MACHINE, an apparatus filled with gunpowder or other explosive materials for the destruction of human life and property. The Italian engineer Federico Gianibelli was the first to employ these engines at the siege of Antwerp in 1584–1585. See ANARCHISM.

INFIDEL, from the Christian standpoint, one who does not believe in the Christian faith. It includes heathens, etc. It is founded on II Cor. vi: 15 and I Tim. v: 8. One who does not believe that Christianity or any other religion has been divinely revealed, though such evidence as exists on the subject has been laid before him, is styled an infidel. The "infidel" may be a Deist, believing in a God, or an Atheist, denying or at least seriously doubting his existence; or an Agnostic, considering that he has not sufficient evidence to form an opinion on the subject.

From the standpoint of the Mohammedan or other non-Christian faiths, the Christian is an "infidel."

INFINITE, not finite; having no bounds or limits; without limit; unbounded; boundless; not limited or circumscribed; applied to time, space, the Supreme Being or His attributes; as, The goodness of God is infinite. In music, a term applied to certain forms of the canon, because they could be played forever, inasmuch as the ending leads to the beginning; called also perpetual canon.

INFINITESIMAL, in mathematics, a quantity less or smaller than any assignable quantity; a quantity so small as not to be comparable with any finite quantity. Infinitesimals are of different orders. No quantity is great or small except in comparison with some other quantity. An infinitely small quantity of the first order is one that is infinitely small with respect to a finite quantity, that is, so small that it may be contained in it an infinite number of times. An infinitely small quantity of the second order is one that is infinitely small with respect to an infinitely small quantity of the first order.

INFLAMMATION, a morbid state of the whole or any part of the system, characterized by heat, redness, and pain. The varieties are—parenchymatous, exudatory or secretory, plastic, rheumatic, gouty, gonorrhœal, and others not so strictly defined.

INFLORESCENCE, the arrangement of flowers upon a branch or stem. It may be axillary or terminal. In the former case the branch can grow indefinitely, producing new flowers on the axils, hence this is called an indefinite inflorescence; in the latter the terminal flower stops the further development of the branch, hence this kind of inflorescence is called definite. Inflorescence may be centripetal or centrifugal. Different kinds of inflorescence are (1) the spike, (2) the raceme, (3) the corymb, (4) the umbel, (5) the panicle, (6) the thyrsus, (7) the compound corymb and compound umbel, (8) the cyme. No. (1) is subdivided into—(a) the spike proper, (b) the ament or catkin, (c) the spadix, (d) the spikelet, (e) the cone, (f) the capitulum, and (g) the cœnanthium. Inflorescence is also frequently called anthotaxis.

INFLUENZA (in-flö-en'zä), a specific catarrhal inflammation of the mucous membranes of the air-passages, contagious, and often epidemic, attended with early involvement of chill, lassitude, and prostration to a marked degree, intense frontal headache, giddiness, and acrid discharge from the nose, with sleepless nights, and sometimes delirium. Persistent cough, worst at night, expectoration, remittent feverishness, with noc-

turnal exacerbations, lasting from four to eight days, sometimes complicated with bronchitis or even pneumonia. A form known as Spanish Influenza was epidemic in the United States and in many other countries in 1918 and 1919, and caused thousands of deaths.

INFUSIONISM, the doctrine that the human soul is an emanation from, or an influx of, the Divine Substance. It is akin to the teaching of Pythagoras and of the Stoics. Its defenders in Christian times have relied on Gen. ii: 7. Infusionism is opposed to Traducianism, and to Creationism, the doctrine accepted by the Eastern and Western Churches.

INFUSORIA, the name first given by Otto Frederick Müller to the mostly microscopic animalculæ developed in organic infusions. A drop of water from a weedy or other pool or ditch, viewed by the microscope, contains them in countless numbers. Pritchard divided them into Bacillaria, which were clearly vegetable, Phytozoa on the borderland between animals and plants, and Protozoa, Rotatoria, or Rotifera, and Tardigrada, clearly animal. Professor Huxley elevated them into one of the eight primary groups into which he divided the animal kingdom. They have neither vessels nor nerves, but possess internal spherical cavities. They move by means of cilia or variable processes formed of the substance of the body, true feet being absent. They occur everywhere, in salt as well as in fresh water. One, Noctiluca, is believed to take a great share in producing the phosphorescence of the ocean.

INFUSORIAL EARTH, a siliceous deposit formed chiefly of the frustates of Diatoms. It is used as Tripoli powder for polishing purposes, and as an absorbent of nitro-glycerine in making dynamite.

INGALLS, JOHN JAMES, an American lawyer; born in Middleton, Mass., Dec. 29, 1833; was graduated at Williams College in 1855 and admitted to the bar in 1857; settled in Atchison, Kan., in 1858; became secretary of the Kansas Senate in 1861; was elected a member of that body in 1862; and was United States Senator in 1873–1891, during which time he attained wide reputation as a public speaker. He was also president pro tem. of the Senate during the last three years of his service. He died in Las Vegas, New Mexico, Aug. 16, 1900.

INGE, WILLIAM RALPH, an English clergyman. He was born at Clayke, Yorkshire, in 1860, and was educated at Eton and Cambridge, being chosen as select preacher at Oxford in 1893. He was Bampton Lecturer in 1899, was made Hon. D.D. Aberdeen in 1905, and in 1906 was Paddock Lecturer at New York. In 1905–7 he was vicar of All Saints, Ennismore Gardens, London. In 1907–11 he was Lady Margaret professor of divinity at Cambridge, and since 1911 has been dean of St. Paul's. His works include: "Society in Rome under the Cæsars"; "Studies of English Mystics"; "Speculum Animæ"; "Types of Christian Saintliness."

INGELOW, JEAN (in'jä-lō), an English poet and novelist; born in Boston, Lincolnshire, in 1820. Her first efforts in verse were published anonymously in 1850. A good deal of her poetry is of a devotional or religious cast. But she also published some powerful ballads, and of her minor pieces "The High-tide on the Coast of Lincolnshire, 1571," is probably both the finest and the best known. Of her larger poems, "A Story of Doom" (1867) has been the most successful. Among her novels may be specially mentioned "Off the Skelligs," a very fine work; "Fated to be Free" (1875); and "Sarah de Berenger" (1880). She died July 19, 1897.

INGEMANN, BERNHARD SEVERIN, (in'gä-man), a Danish poet and novelist; born May 28, 1789. A very prolific writer of the sentimental school. He was extremely successful with several selections of "Fairy-tales and Stories." But his best works were a series of historical novels, in which he took Walter Scott for his model—"Valdemar Seier" (1826), "Erik Menved's Childhood" (1828), "King Erik" (1833), and "Prince Otto of Denmark" (1835). The poems "Waldemar the Great and his Men" (1824), "Queen Margaret" (1836), and "Holger Danske" (1837) are based, like his novels, on incidents of Danish national history. He died Feb. 24, 1862.

INGERSOLL, ERNEST, an American naturalist; born in Monroe, Mich., March 13, 1852; was educated at Oberlin College and the Harvard Museum of Comparative Zoölogy; employed on the Hayden Survey and the United States Fish Commission; later was engaged as a journalist in Montreal. His publications include "Oyster Industries"; "Friends Worth Knowing"; "Country Cousins"; "Knocking 'Round the Rockies"; "Crest of the Continent"; "Canadian Guide-Book"; "The Book of the Ocean" "Nature's Calendar" (1900), "Life of Mammals" (1906), etc.

INGERSOLL, ROBERT GREEN, an American lawyer; born in Dresden, N.

Y., Aug. 11, 1833; was admitted to the bar in 1854; soon became distinguished in the courts and in Democratic politics as an orator; recruited the 11th Illinois Cavalry in 1862, and entered the army as its colonel. On Nov. 28, 1862, while trying with a force of 600 men to intercept a Confederate raiding body he was captured by a force of 10,000 men, but was soon paroled and given command of a camp in St. Louis. He soon afterward resigned. After the war he became a Republican; was made attorney-general of Illinois in 1866; was a delegate to the Republican National Convention in 1876 and there nominated for president,

ROBERT G. INGERSOLL

James G. Blaine, whom he termed "the plumed knight." He was prominent in politics for several years, and had he not given strong expression to his views as an agnostic he would doubtless have been honored with high offices. He settled in New York city in 1882 and practiced law there till his death. His most famous lectures include "Some Mistakes of Moses"; "The Family"; "The Liberty of Man, Woman, and Child"; "The Gods"; and "Ghosts." His publications include "Lectures Complete"; "Prose, Poems and Selections"; and "Great Speeches." He died in Dobbs Ferry, N. Y., July 21, 1899.

INGHAMITES, a religious sect founded by Benjamin Ingham, one of the early Methodists. Separating from his original connection, he joined the United Brethren, but soon after founded a sect the doctrines of which were a modification of those of the Glassites and the Sandemanians.

INGOLDSBY, THOMAS. See BARHAM, RICHARD HARRIS.

INGOLSTADT (in'gōl-stät), a town and fortress of Upper Bavaria, on the Danube. Its fortifications, demolished in 1820, have since been rebuilt stronger than before. Its university, once celebrated, was removed to Munich in 1826. Pop. about 25,000.

INGOT, a cast mass of steel from the crucible; a cast mass of gold or silver, more or less pure, for assaying; a cast block of gold, silver, or a properly proportioned alloy of either, for coinage, or for working into other forms, as watch cases, etc.

INGRAHAM, JOSEPH HOLT, an American author; born in Portland, Me., in 1809; received a collegiate education; was ordained a Protestant Episcopal clergyman; became widely known through his writings. His publications include "The South-west, by a Yankee" (1836); "Lafitte: the Pirate of the Gulf"; "The Prince of the House of David" (1855); "The Pillar of Fire" (1859); and "The Throne of David" (1860). He died in Holly Springs, Miss., in December, 1860.

INGRES, JEAN AUGUSTE DOMINIQUE (*ang'*-gr), a French historical painter; born in Montauban, in 1780. He studied under David, and subsequently went to Rome. He was called to the School of Fine Arts in Paris as the successor of Denon, and succeeded Horace Vernet, in 1829, as Director of the Academy at Rome. Ingres occupies a middle place between the classical and romantic schools. His best known pictures are "Jupiter and Thetis," "Woman in the Bath," "Raphael and the Fornarina," "The Sistine Chapel," "The Vow of Louis XIII." (regarded by many as his chef d'œuvre), "The Birth of Venus Anadyomene," "Jesus Disputing with the Doctors," "Racine in his Court Dress," "Jeanne D'Arc at the Coronation of Charl s VII.," "Portrait of Cherubini," and "La Source." He died in 1867.

INGRESS ("a going in,"), in astronomy, the beginning of the apparent transit of one body over the face of another, as of Mercury or Venus over the face of the sun, or of a satellite of Jupiter across the disk of that planet.

INHAMBANE, a Portuguese station, capital of a district on the E. coast of Africa; just S. of the tropic of Capricorn, is beautifully situated on its bay, but unhealthy.

INHERITANCE, in biology, transmission in generation by descent. Darwin considers the inheritance of every character to be the rule, and non-inheritance the anomaly. In law, a perpetual or continuing right to an estate invested in a person and his heirs. There are nine "canons of inheritance"; three may be quoted: (1) That inheritance shall, in the first place, descend to the issue of the last purchaser in *infinitum;* (2) That the male issue shall be admitted before the female; (3) That where two or more of the male sex are in equal degree of consanguinity to the purchaser, the eldest only shall inherit, but the females all together.

INHERITANCE TAX, a certain percentage of the estate of a deceased person taken by the State in its transmission to his heirs. Taxes of this sort, known as "death duties," were imposed in Rome, two thousand years ago. It is only within recent times, however, since the increasing tendency toward the concentration of wealth in the hands of a few persons has become an economic problem, that the taxation of inheritances has assumed special significance. It is now one of the measures proposed by all progressive and radical parties to counteract the accumulation of vast, unearned fortunes from generation to generation. The right of wealthy persons to hand on their fortunes to heirs who have done nothing to earn them is becoming more and more questioned in all advanced countries. This is especially true of industrial countries, where vast wealth is produced through commercial enterprise and where invested capital plays a large part in economic development. It is therefore, not surprising to find Great Britain, her colonies, and the United States prominent among those countries where the taxation of inheritances has become an established principle. Inheritance taxes are especially heavy in Australia, where the labor elements are a powerful influence in politics. In England the inheritance tax ranges from one to ten per cent., depending on the closeness of relationship between the deceased and his heirs.

In the United States an inheritance tax was imposed first during the Civil War, but this was entirely for the purpose of raising revenues for the prosecution of warfare, and ceased after the war. Within recent years a large number of separate States have imposed inheritance taxation. There has, of course, been much opposition on the part of the wealthy classes, but generally such laws have been upheld as constitutional by the various courts in which they have been tested, holding that taxes of this sort were not confiscatory.

In all States, as well as in all foreign countries, the rate of inheritance taxation increases in two directions. First of all, there is an increase in proportion to the amount of the estate inherited, no tax at all being imposed on trifling amounts, while, as is the case in the State of Georgia, the rate may rise above 21 per cent. where over half a million dollars are involved. Also, the rate of taxation will usually be less in a case where the heirs are the children of the deceased, and greater where the heirs are distant relatives, or perhaps not relatives at all. Exception, of course, is usually made where the estate is left to religious, or philanthropic institutions. The most recent States in this country to pass inheritance tax legislation are Kansas, New Hampshire, Georgia and New Mexico, all of which imposed direct inheritance taxes during 1919. In the majority of other States where such taxes are already part of the State laws there is a continuous tendency to increase the rate.

INIA, a toothed fresh water Cetacean, not unlike a dolphin, but with certain anatomical peculiarities which keep it outside that family. It is found in some of the upper tributaries of the Amazon, and in the lakes near the Cordilleras. It feeds chiefly on fish, and is hunted for the sake of the oil which it yields.

INITIATIVE, a plan which originated first in Switzerland which permits private citizens to draw up a legislative bill, and, if a certain percentage of the voters sign the measure, to have it submitted directly to the whole body of citizens. If the bill secures a majority it becomes a law. Many of the States of the United States have adopted the initiative, feeling that the State Legislatures were not sufficiently responsive to popular feeling. South Dakota was the first State to adopt the plan, which it did in 1898. In the next 15 years the following States took similar action: Oregon, Nevada, Montana, Oklahoma, Michigan, Maine, Arkansas, Colorado, Arizona, New Mexico, California, Ohio, Nebraska, Washington, Idaho, and North Dakota. About the same time some 300 cities adopted the plan for the making of local ordinances. Since 1915 the plan has not

gained much headway in any other State. The Progressive Party of 1912 endorsed the plan in its platform, but neither of the two older parties did. In practical operation it falls short of much that is claimed for it, encountering as it does the indifference of the voters. Many students of political science have questioned its usefulness, claiming that it substitutes direct for representative government; thereby confusing the proper function of the electorate and reducing legislative bodies to a nullity.

INSPECTOR GENERAL, a name employed to designate a military officer, having various duties in various branches of the service, but whose original responsibility was that of supervision and inspection. The designation is given to all the officers of the inspector general's department, though their service varies greatly. The duties involve the proper inspection of accounts relating to expenditures, the condition of the troops and their equipment, the military posts, arsenals and public works, and general conduct unbecoming in an officer. There are inspectors general of infantry, cavalry, engineers, artillery and other branches of service. In the medical department the inspectors general of hospitals are the head surgeons. In European countries the duties of inspectors general are carried out by the general staff of the army.

INJECTION, the act of filling the vessels and other minute tubular organs of animals with colored substances more clearly to exhibit their relative size, arrangement, and relation to the surrounding parts. The color is injected by means of a syringe. Also the art of injecting any therapeutic agent into the rectum, or of introducing such agent under the skin, etc.; that which is injected.

INJECTOR, a steam boiler feeder, composed of a body or casing enclosing one or more series of converging and diverging nozzles, so arranged and proportioned that the entering steam will cause a continuous injection of feed water against the initial boiler pressure. The body is provided with branches for the steam, water, and delivery pipes, and a waste pipe or overflow. In England and on the Continent, the branches are flanged, but in the United States screw coupling nuts are used. Both the body and the tubes are made of some durable non-corroding material, preferably bronze or red brass.

INJUNCTION, a writ or process granted by a court of equity, and in some cases under statutes by a court of law, whereby a party is required to do, or to refrain from doing, certain acts, according to the exigency of the writ.

In the United States, the writ of injunction, as resorted to in labor disputes, has occasioned much controversy. Injunctions issued against strikers were alleged to "convert innocent acts into a crime." The Federal courts were the principal subjects of criticism in 1901.

INK, a liquid or pigment used for writing or printing. Inks may be classed under four heads:

Writing inks consist either of colored liquids, or of finely divided colored precipitates suspended in a liquid. Red ink is a solution of cochineal or pure carmine in ammonia, or of brazil wood in water. Blue ink is a solution of Prussian blue and oxalic acid in water. Chrome ink is a preparation of logwood and potassium bichromate.

Marking ink must be able to withstand the action of soap, alkaline, and acid liquids. It usually consists of a solution of silver nitrate, colored with lampblack and thickened with gum.

Copying ink must be thicker than ordinary ink, and must not dry too quickly. It is usually prepared by adding a little sugar or glycerine to ordinary black ink. Its sp. gr. should not exceed 1.071.

Printing ink. All inks used for printing consist essentially of well boiled drying oils, mixed with lampblack or other pigments. Soaps and resinous matters are frequently added to give the oils the required consistency.

INKBAG, a gland found in the *Cephalopoda*. It is tough and fibrous, with a thin outer coat. The animal discharges the contents of the bag through a duct into the water when it wishes to conceal itself or escape from an enemy.

INKERMANN, a village of Russia, in the S. of the Crimea. During the Crimean War, the Russians, nearly 50,000 strong, assailed the weakest part of the English position facing the harbor of Balaklava and the caverns of Inkermann, Nov. 5, 1854. For six hours, 8,000 British troops encountered at various points and resisted the assault of this overwhelming force. The French came to the support of the English, and the Russians were driven back with great slaughter.

INN (ancient Œnus), a river of Germany, the most important Alpine affluent of the Danube, rises in the S. of the Swiss canton of Grisons, and flows N. E. through the valley of the Engadine, and

through Tyrol and Bavaria to its junction with the Danube at Passau in a stream broader than that of the Danube. Its total course is 317 miles.

INN, a house where travelers are furnished, for the profit of the provider, with everything they have occasion for while on their journey. Innkeepers are bound to take in all travelers and wayfaring persons, and to entertain them if they have accommodation for them and are bound to give to such accommodation at reasonable charges, provided they behave themselves properly. As a protection they have a lien on the goods of their lodgers (with the exception of the clothing which they are actually wearing), so that they may retain them as security.

Inns of Chancery, colleges in England in which young students formerly began their law studies. They are now occupied chiefly by attorneys and solicitors.

Inns of Court, colleges or corporate societies in London, to one of which all barristers and students for the bar must belong; also the buildings belonging to such societies in which the members of the inn dine together, and barristers have their chambers. There are four such inns—viz.: the Inner Temple, the Middle Temple, Gray's Inn, and Lincoln's Inn.

INNATE IDEAS, the term generally supposed to correspond to the *koinai ennoiai* of the Stoics—"general notions developed in the course of nature in all men"—though the earlier teachers of that school regarded these ideas as the natural outgrowth of perceptions, not as innate. On the Continent the doctrine of innate ideas was revived by Descartes, who held that the notion of things, truth, and thought were naturally common to all men. The doctrine will be found in the "Treatise on Truth" of Lord Herbert of Cherbury. On the opposite side, Locke ("Human Understanding," book i.).

INNESS, GEORGE, JR.; an American artist, born in Paris, in 1854, the son of George Inness. He studied under his father in Rome from 1870 to 1874 and afterwards took art courses in Paris. He lived in the United States from 1878 but maintained a studio in Paris from 1895 to 1899. He exhibited at the Paris Salon and in 1900 received a gold medal. He was a member of the National Academy. He wrote "Art, Life, and Letters of George Inness" (1917).

INNESS, GEORGE, an American painter; born in Newburgh, N. Y., May 1, 1825; studied painting in New York and Europe; resided in Italy in 1871–1875. His "American Sunset" was exhibited in the Paris Exposition of 1867. His other works include "Peace and Plenty," "A Vision of Faith," "The Valley of the Shadow of Death," "A Passing Storm," "The Morning Sun," "Delaware Water-Gap," etc. He died Aug. 3, 1894.

INNISFAIL ("Isle of Destiny"), an old name for Ireland.

INNOCENT, the name of several Popes:

INNOCENT I., Pope, was a native of Albano, and succeeded Anastasius I. in 402. He endeavored to obtain terms of peace with Alaric, 407, but was unsuccessful, and during the following year Rome was taken and pillaged. He died in 417.

INNOCENT II., a Roman of noble birth, elected Pope in 1130 by a part of the cardinals, while others chose Peter of Leon, who took the name of Anacletus. The party of the latter being the strongest at Rome, Innocent II. retired to France. This contest for the papal chair continued until the death of Anacletus in 1138. In 1139 Innocent was taken prisoner by Roger, King of Sicily, the chief supporter of the rival Pope. He was released on recognizing Roger's title as King of Sicily. He died in 1143.

INNOCENT III. (Lothario Conti). Born in Anagni in 1161. He succeeded Celestine III. in 1198; and being endowed by nature with all the talents of a ruler, he was qualified to extend the papal power. His first care was to recover and secure such portion of the domains of the Holy See as were in the hands of usurpers. He sought to unite the Christian princes in a crusade for the recovery of Palestine, and promoted the crusade against the Albigenses. He had put France under an interdict because Philip Augustus divorced his queen, Ingeburga; and when John, King of England, refused to confirm the election of Stephen Langton as archbishop of Canterbury, Innocent laid the kingdom under a curse also and in 1212 formally deposed John and instigated the King of France to attack England. John was finally obliged to submit, resigned his territories to Rome, and and received them as a papal fief from Innocent. In 1210 the Pope excommunicated the Emperor Otho IV., who owed to him his elevation. Innocent abolished the Roman Senate and the Consulate, and thus made himself absolute in his estates, which now extended from the Adriatic to the Mediterranean. Almost all Christendom was now subject to the Pope; two crusades were undertaken at his order, and his

influence extended even to Constantinople. Innocent enforced purity of morals in the clergy and was himself irreproachable in private life. In 1215 he convoked the fourth general council of the Lateran. He died in 1216.

INNOCENT IV. (Sinibaldi de Fieschi) was a Genoese, and became chancellor of the Roman Church. Gregory IX. created him a cardinal in 1227. He succeeded Celestine IV. in 1243 at which time the court of Rome was engaged in a contest with the Emperor Frederick II. Innocent was obliged to retire to France, where he held the council of Lyons in which Frederick was excommunicated. He is said to have been the first who gave red hats to the cardinals. He died in Naples in 1254.

INNOCENT V., a Dominican, became archbishop of Lyons, a cardinal, and succeeded Gregory X. in 1276, but died five months after his election. Some religious pieces of his have been printed.

INNOCENT VI., cardinal-bishop of Ostia, succeeded Clement VI. in 1352. He was a man of great learning and liberality, and some of his letters are extant. He died in Avignon in 1362.

INNOCENT VII., born in Abruzzo in 1336, was elected Pope in 1404, but not without great opposition. He died in 1406.

INNOCENT VIII., a noble Genoese, of Greek extraction; born in 1431; obtained the tiara, in succession to Sixtus IV., in 1484. He endeavored to organize another crusade but without success. He died in 1492.

INNOCENT IX., born in Bologna, in 1519, ascended the papal throne on the death of Gregory XIV., in 1591, but died two months afterward.

INNOCENT X. (J. Baptist Pamphilius), a Roman, succeeded Urban VIII. in 1644, at the age of 73. He condemned the doctrines of Jansenius, and prosecuted the Barberini family with great violence. He died in 1655.

INNOCENT XI. (Benedetto Odescalchi), born in 1611, was the son of a banker at Como, in the Milanese. In his youth he served as a soldier in Germany and Poland, quitted the camp to take orders, and rose through the intermediate dignities to the pontificate in 1676, on the death of Clement X. He was eminent for his probity and austerity. He resolved to put an end to the mischief which had grown out of a prescriptive claim of the foreign ambassadors at Rome to a right of asylum. This led to a long quarrel with France, as Innocent would not make any exception to his rule. The sect of the Quietists arose at Rome under this pontificate. Innocent died in 1689.

INNOCENT XII. (Antonio Pignatelli), a noble Neapolitan, succeeded Alexander VIII. in 1691. He abolished the extraordinary distinctions paid to the nephews of Popes, and condemned the "Maxims of the Saints," written by Fenelon. He died in 1700.

INNOCENT XIII. (Michael Angelo Conti), a Roman, and the 8th Pope of his family, born in 1655, succeeded Clement XI. in 1721. He was opposed to the Jesuits and forbade new novices for the order, the suppression of which he at one time contemplated. He died in 1724.

INNOCENTS' DAY, the English name for the feast celebrated on Dec. 28, to commemorate the massacre of the children of Bethlehem by Herod, in the hope of killing Jesus. It was probably first celebrated toward the close of the 5th, or early in the 6th century. It is known in the Latin Church as the Feast of Holy Innocents, and Mass is said in purple vestments, probably because the Innocents "did not enter heaven till Christ at His Ascension opened it to those who believe." On the octave the vestments are red, the proper color of martyrs. In the Greek Church the feast is celebrated on Dec. 29, and is known as the Feast of the 14,000 Holy Children.

INNOMINATE ARTERY, the largest of the vessels which proceed from the arch of the aorta. It arises from the transverse portion of the arch before the carotid artery. It ascends obliquely toward the right, and divides into the right subclavian and the right carotid artery. It varies in length from 2 inches to 1 inch or less. Called also the brachycephalic artery.

INNOMINATE BONE, the os coxæ, or pelvic bone. It is constricted in the middle and expanded above and below, and much bent. It articulates with its fellow of the opposite side, with the sacrum, and with the femur. In early life it is in three portions; the ilium, the os pubis, and the ischium. They begin to ossify before birth, but the process is not completed till the 23d or 25th year.

INNSBRUCK, the capital of Tyrol, 109 miles from Munich. The Franciscan Church, or Hofkirche, built in the Renaissance style in 1553–1563, contains a beautiful monument to the Emperor Maximilian I. and monuments to Andreas Hofer and his comrades Speckbacher and Haspinger, and to the Tyrolese who fell in the wars against France (1796–1809). The university (founded in 1677) is rich in Alpine flora, and the usual museums, laboratories, etc. Among

the eight monasteries of Innsbruck is the first that the Capuchins founded in Germany (1594). Innsbruck carries on manufactures of woolen cloth, machines, and glass, and glass-painting. Pop. about 50,000, including suburbs.

INNUIT, the native name of the people occupying the entire coast line of Alaska, with the outlying islands along the Arctic coast to Bering Strait, S. to the Alaska Peninsula, E. and N. along the Pacific coast to Mount St. Elias, with the exception of a small territory on Cook's Inlet and at the mouth of Copper river, where the Tinneh from the interior have forced their way to the coast. They are tall and muscular, have small black eyes, high cheek bones, large mouths, thick lips, coarse brown hair, and fresh yellow complexions. Occupying the coast line, they are bold navigators and skilled fishermen and sea hunters.

INOCULATION, the act, art or operation of communicating a disease to the bodily frame by introducing, by punctures in the skin, or otherwise, the specific poison by which it is produced; also the introduction in such a manner of variolous matter into the system. It is to Constantinople that the world is indebted for the discovery. In 1713 Dr. Emanuel Timoni, a Greek physician there, wrote a letter to Dr. Woodward in favor of inoculation, which was published in the "Philosophical Transactions." The actual introduction of the practice into England was brought about by a letter written in a lively style from Turkey in 1717, by Lady Mary Wortley Montague. Gradually it made way, and was firmly established by 1798 in which year Dr. Jenner announced the discovery of vaccination. Before this, the improved methods introduced by Daniel and Robert Sutton had reduced the mortality, which, in 1797, 1798, and 1799, in the smallpox hospitals was only 1 in 662. Inoculation for smallpox is performed by applying the variolous matter to a few scratches made upon the skin. It communicates actual variola, which, however, as a rule, is of a mild type, but acts as an excellent prophylactic against a malady of more virulent character.

INORGANIC CHEMISTY, the chemistry of inorganic or unorganized bodies. In general terms it may be said that inorganic chemistry treats of the metals, or of the metals in combination with one or more of the non-metallic bodies. A metal in combination with oxygen produces an oxide, while a metal in combination with an acid produces a salt, both being inorganic compounds. The aim of inorganic chemistry is to examine into the general laws or rules which regulate the formation of such metallic bodies, and to determine the action of one upon another.

INOSITE, (in'ō-sīt), in chemistry, $C_6H_{12}O_6 2H_2O$, a non-fermentable substance, isomeric with glucose discovered by Scherer in the muscular substance of the heart of the ox. It has since been found to exist in the lungs, kidneys, liver, spleen, and brain, and in the urine during some diseases of the kidney. It is obtained from the mother liquor of the creatine crystals, by acidulating with sulphuric acid, and then gradually adding alcohol till a turbidity begins to appear. Inosite is also found in many plants, especially in green beans, the shells of peas, in the leaves of the vine, in asparagus, etc.

IN PARTIBUS, the usual contracted form of the Latin phrase, *in partibus infidelium* = in countries belonging to unbelievers. Bishop *in partibus*, a bishop consecrated to a see formerly existing, but which, owing chiefly to the rise of Mohammedanism, has long been lost to the Roman Church. Bishops *in partibus* date from the Reformation. Catholic affairs in England were managed by Vicars-Apostolic, having titular sees *in partibus*, from 1623 to the erection of the hierarchy in 1850. Besides Vicars-Apostolic, in a non-Catholic country, the Vicars of Cardinal-bishops, Suffragan-bishops, and Papal Nuncios usually have their sees *in partibus infidelium*.

INQUEST, in legal proceedings, most commonly the finding of the court or jury in a civil case, when the defendant does not appear on the trial. Also the investigation made by the coroner, with the aid of a jury, as to the cause of a sudden or violent death.

INQUISITION (Latin *inquisitio* = a seeking or searching for), in the history of the Roman Catholic Church, a tribunal for searching out, inquiring into, and condemning offenses against the Canon Law, especially heresy, and taking means to have the offenders punished by the Civil Power. Inquisitors and the Inquisition did not come in together; the former preceded the latter (see INQUISITOR). The institution was resolved on at a synod held at Toulouse, in 1229, under Gregory IX., after the Albigensian crusade, and was formally established by him in 1233. The synod ordered that in every parish a priest and several respectable laymen should be appointed to

search for offenders, and bring them before the bishops. Ere long the bishop handed over the invidious task to the Dominican order. Gregory appointed none but Dominicans, Innocent III. occasionally Franciscans, and Clement III. sent into Portugal a prior of the order of Minims. The tribunal was called the Holy Office, or the Holy Inquisition. Its judges, in unqualifiedly perfectly fair accordance with contemporaneous ecclesiastical procedure, encouraged informers, concealing their names from the person accused, who was urged to make a complete confession. Torture was also used to extract evidence. It was established in France in consequence of the decrees of the Synod of Toulouse. Philip the Fair converted its tribunals into State Courts, by means of which he crushed the Templars. In 1538 the Grand Inquisitor, Louis de Rochelle, was convicted of Calvinism, and burnt. The power of these courts was soon after transferred to the Parliament, and finally, in 1560, to the bishops.

Nowhere in the world did the Inquisition find a more congenial soil than in Spain. In 1481 the Inquisition was established at Seville, by Ferdinand and Isabella, two Dominicans being the first judges. Torquemada, another Dominican, who became Grand Inquisitor in 1483, and held office for 15 years, extended it to various other towns. It was introduced into Peru and Mexico in 1571. Llorente, the historian of the Inquisition, was its secretary at Madrid from 1790 to 1792. Napoleon I. suppressed it on Dec. 4, 1808, and it was abolished on Feb. 12, 1813, by the Cortes. Ferdinand VII. having re-established it in 1814, the Cortes in 1820 abolished it again. (See AUTO DA FÉ.) In 1526 it was set up in Portugal; in 1815 its acts were burned at Goa. The Congregation of the Cardinals of the Holy Inquisition was instituted by Pope Paul III., in 1542, and remodeled by Sixtus V. about 40 years later. The attempted introduction of the Inquisition into the United Provinces caused the loss of that fertile territory to Spain. No inquisitor, under that name, seems to have ever been commissioned to England; and when, in the 13th century, Conrad of Marburg attempted to establish the "Holy Office" in Germany, he was assassinated.

In law: (1) A judicial inquiry, investigation, or examination; an inquest. (2) The verdict of a petty jury under a Writ of Inquiry; also where the court requires a particular fact certified, or requires the sheriff to do certain acts in furtherance of its judgment.

INQUISITOR, in church history, a person appointed to search out latent heresy. The name first appears in the Theodosian Code, A. D. 382; their search being chiefly directed against the Manichæans. During the crusade against the Albigenses, early in the 13th century, Innocent III. had sent out legates to search out and punish these separatists. These were called inquisitors. Specifically, a functionary of the ecclesiastical tribunal called the Holy Office of the INQUISITION (*q. v.*).

INSANITY, a more or less impaired condition of any or all of the mental functions involving the intellect, emotion, or will. There can be no absolute test of insanity—or of sanity for that matter. Sanity is proved by normal self-control, and insanity by the loss of it from disease.

The most common mental symptoms are morbid emotional depression and mental pain. In many cases of insanity to energize mentally is to suffer pain. Another symptom in other cases is an undue emotional exaltation; this is commonly associated with a loss of the great controlling or inhibitory functions of the brain, and occurs in mania. There is morbid brain excitement, commonly exhibited in restless motions or shouting. Such cases may go on to complete loss of any consciousness of all the former brain impressions and mental life. The patient remembers nothing and does not know his nearest friends. Another common symptom is a diminution or loss in the power of attention. This is common to nearly all forms of insanity. Then we have perversion of the reasoning power, as seen more frequently in insane delusions, which are common in most cases and varieties of insanity. They are divided into fixed delusions and changing delusions, the former being the more serious and incurable. Hallucination is sensation without an object. The hearing of voices, when none exist, is a good illustration. Hallucinations are usually subjective and psychical in their origin, though unquestionably both a psychical and a sensorial element may enter into their genesis. Hallucinations may be of hearing, which are the most common and the most serious, as a symptom of incurability if long continued; of sight, the next most common and more likely to be recovered from; of smell and taste, which are rare, and not favorable. Another mental symptom of insanity very common is impulsiveness of action in an automatic, unreasoning way sometimes without any conscious intention on the patient's part, and without power

of control by the will. A man sees a large plate glass window and he impulsively hurls a stone through it. Another cannot resist the impulse to tear his clothes, a third cannot resist the impulse to set a haystack on fire. Uncontrollable impulse naturally goes with diminished volition in insanity.

One of the most common and most painful symptoms of insanity is a change of natural affection toward relatives. This is not universal, but in nearly half the cases of insanity the affective condition is thus perverted or reversed. The memory is not necessarily affected in insanity. In many patients it is exaggerated; things come back with unnatural vividness.

One of the chief bodily symptoms in insanity is sleeplessness. Almost every kind of insanity is sleeplessness in its early stages. Another is morbidness of speech; it may be incoherent or partially coherent; it may be over-rapid, slow, or entirely absent. Often the conventionalities of speech are lost or dropped in insanity. The articulation of words may be changed. Next in importance to speech is the expression of the face and eyes. This is given by the most delicate combined muscular and nervous apparatus that exists in nature, being in the most intimate connection with the mental part of the brain, and acting as its chief expositor and interpreter. In the depressed and demented cases the eye loses its luster and brilliancy; in maniacal cases it has abnormal feverish brilliancy; the pupil enlarging and the eye-lids being drawn too far apart produce staring, by exposing not only the cornea, but much of the sclerotic as well. Irregularity of the pupil is suggestive of organic brain disturbance. The natural expression of the face is greatly changed, and little beauty of feature survives during acute attacks. The conventional control over the outward expression of the emotions is lost, and the face accurately shows the state of the melancholic, the maniacal, or the demented patient.

Clouston has thus classified the forms and varieties of insanity:

Melancholia, comprising all states of depression, and having emotional depression or mental pain and sense of ill-being as its leading and dominant symptom. There may in addition be loss of self-control, insane delusions, which are usually suggested by the depression or impulses toward suicide, as well as incapacity to follow ordinary avocations in melancholia. These distinguish it from sane melancholy. Suicide is the great risk in such cases; four-fifths of melancholic cases being suicidal. The recoveries from melancholia are the most complete of all forms of insanity. It would seem to be caused by a more entirely functional and dynamical brain disturbance than any other form of insanity that may leave no trace whatever behind it after recovery.

Mania, comprising all states of mental exaltation, such as joyousness and rage, and commonly accompanied by muscular excitement, restlessness, sleeplessness, the speech tending to become incoherent, the conduct violent or uncontrolled. The symptoms range from a joyous elevation with talkativeness and merely want of common sense and foolish conduct up to complete incoherence, delirium, and raving madness, or "acute mania." Folie circulaire, or states of regular alternation between melancholia and mania, forms a small but distinct variety of insanity.

Monomania, or delusional insanity, is that form where insane delusions are the chief signs of the mental aberration. In such cases the intellect is chiefly affected rather than the affective nature. The delusions are morbid in a particular direction, the chief forms being monomania of grandeur or pride, of unseen agencies, and of unfounded suspicions. Electricity, mesmerism, telephones, gases, noises made by imaginary persecutors are the common subjects of the second form; while utterly perverse interpretations of the conduct of friends or strangers is the common form of the latter. The two together are sometimes classed as monomania of persecution. Hallucinations of the senses—*i. e.*, imaginary sights, sounds, smells, and tastes—are very common in this form of insanity. It is not very curable when the delusions get fixed.

Dementia, or conditions of general mental enfeeblement, is the state of mind where the memory is impaired, the reasoning weakened, the feelings diminished, the will especially lacking, the attention and curiosity far below normal, these changes having occurred in a person who had at one time been normally constituted. It is in fact silliness, want of mental force, imbecility not congenital, but acquired.

Stupor, embraces those cases where there is mental torpor, in which impressions on the senses produce no effect, the patient neither speaking nor taking notice of anything, and having no volition except to resist, but being able to stand, walk, and to eat. Trance and catalepsy are forms of stupor, the heart's action is low and the body is cold, and the muscles are flabby. Stupor commonly occurs in

young people of both sexes, and is very curable, 50 per cent. recovering.

Impulsive insanity, or states of defective control, is the most interesting of all the divisions of the mental classifications, inasmuch as will is the highest of all the mental faculties, and volitional disturbances have a close relationship to morals, law, social life, and conduct. The children of insane or drunken parents are lacking in the normal power of control, and in their perception of the sense of right and wrong, their conduct being apt to be impulsive and not guided by reasonable motives. All forms of insanity are more or less distinguished by lessened control, but there are persons without general depression or excitement, insane delusions, or enfeeblement of mind, who will suddenly smash furniture, tear clothing, steal, set things on fire, obey gross animal impulses, or kill themselves or others. The function of mental inhibition residing in the highest regions of the brain, controls mental action in other portions of the brain convolutions. In this form of insanity it is supposed that the inhibitory controlling portions or "centers of mental inhibition" have lost their power.

Clinical Varieties.—Chief among these types of insanity is general paralysis, a specific disease of those portions of the brain that subserve mind and motion. It is always incurable, getting progressively worse, gradually impairing and at length destroying speech, motion, mind, and, usually in about three years' time, life itself. In this form of insanity patients commonly have extravagant delusions of wealth and power. Paralytic insanity is that connected with apoplexies, softenings and tumors of the brain, which cause ordinary paralysis first, and one form of dementia afterward. Epileptic insanity may accompany epilepsy. It is often attended by great violence and irritability, and by danger to those around the patient. Many murders are committed by insane epileptics. Syphilitic insanity is the result of brain poisoning by this terrible scourge of humanity. Alcoholic insanity is a very frequent form. It may be very short in duration or very long continued, or incurable. Rheumatic and gouty insanities are very rare.

Phthisical insanity, or that connected with consumption, is a very interesting variety. The patients are suspicious and unsocial, and often have no cough or spit or outward sign of consumption, which may not be discovered till the chest is examined. In some cases it is curable. There are various forms of insanity connected with derangement of the reproductive functions. Uterine, amenorrhœal, ovarian, hysterical, and masturbational insanities; while pregnancy, childbirth, and nursing are the causes of the insanity of pregnancy, puerperal insanity, and lactational insanity. These form 10 per cent. of mental disease in the female sex. They are the most curable of all forms, recovering in over 80 per cent. of the cases. Puerperal insanity occurs commonly within a fortnight of childbirth, and is the most acute and one of the most dangerous to life of all insanities, while the most curable, and is attended by the highest temperatures, sometimes reaching 105°. The different periods of life have each their own form of insanity. Pubescent and adolescent insanity is always hereditary, commonly acute and maniacal, usually has remissions and exacerbations and recovers in over 60 per cent. of the cases, those not recovering commonly passing into the most typical form of secondary dementia. It is one of numerous diseases to which the period of development is subject. Climacteric insanity occurs at the period of the menopause or the "change of life." It is usually melancholic in character and recovers in 53 per cent. of the cases under proper treatment and conditions of life. Senile insanity is typically seen in the senile dementia of extreme old age, when the memory and all the faculties have faded away.

A number of rarer and less important clinical varieties of insanity have been described. Traumatic insanity, from injuries to the head; anæmic insanity, from thinness of blood; diabetic insanity; insanity from Bright's disease; post-febrile insanity, following all kinds of fevers, especially scarlatina; the insanity of lead-poisoning; and myxœdematous insanity.

Causes of Insanity.—Hereditary tendency is the chief predisposing cause of insanity. All sorts of disturbing influences to the brain bring out this predisposition into actual disease. No doubt 70 per cent. of all cases have an insane or neurotic heredity. Epilepsy, drunkenness, all nervous diseases, consumption, too exciting or depressing or exhausting employment, or unfavorable conditions of life in ancestry may cause insanity in the offspring. Marriage of near relatives causes it if the stock is bad; not if it is good. The physical causes of insanity affecting the body, such as alcohol in excess, produce insanity in four times the proportion which mental and moral causes, such as affliction, losses, love-affairs, and religious excitement, do.

Nature of Insanity.—No one now

doubts that it is due to disorder of function of a certain portion of the brain—viz., that part of the cortex which is the vehicle of all mental function. The exact pathology of many forms of insanity has not as yet been ascertained; but in 80 or 90 per cent. of the cases that die some abnormality can be found in the brain.

Treatment of Insanity.—The general principles of modern treatment may be divided into bodily and mental or moral. The bodily treatment may be generally said to be to put all the organs and functions right if wrong; to get up the strength and fat of the body; to restore the tone and right working of the nervous system; to restore the sleep; to invigorate and soothe by life in the open air; and to let off undue and morbid nervous energy by much exercise, gymnastics, and massage in some cases, and to secure complete brain and body rest for others. The mental treatment consists chiefly in careful observation, companionship, control, distraction of the mind from morbid thought and feeling, by suitable occupations and amusements, and guarding against the dangers of suicide, homicide, and self-neglect.

All the States and many of the larger cities in the United States are equipped with hospital facilities for the insane. In 1918 there were reported in the entire United States 239,820 insane persons. Of these 125,919 were males and 113,901 females. In the State hospitals were 109,994 insane males and 97,711 insane females.

INSCRIPTIONS, the name given to records, not of the nature of a book, which are engraved or inscribed on stone, metal, clay, and similar materials. Since ancient documents committed to such destructible material as papyrus, parchment, or paper have largely perished, inscriptions on harder materials are in many cases the sole sources of our knowledge of ancient history and of early languages; and, even when MSS. have been preserved by copyists, inscriptions, which preserve the original forms of the letters, are of supreme palæographical importance. All the books of the Phœnicians, Sabæans, Etruscans, Babylonians, Assyrians, Numidians, and Iberians have perished, and hence a considerable portion of our knowledge of early Oriental history is derived solely from inscriptions. A very large number of inscriptions are mortuary epitaphs. Others, usually the most important, are records of the events in the reigns of kings. Others are dedications of altars, temples, or aqueducts. Many are of a religious character, recording donations to temples or in honor of the gods. Others are commercial contracts, banking records, receipts for taxes scratched on potsherds, or on walls, imprecations, and inscriptions on seals, gems, or vases. The chief classes are Semitic, Greek, Latin, Runic, Cuneiform, Egyptian, and Indian.

American Inscriptions.—In Greenland, on the shores of Baffin Bay and Davis Strait, a few genuine Runic inscriptions have been discovered. They probably date from the 11th and 12th centuries, and were doubtless executed by Icelandic colonists or explorers. There are numerous inscriptions on the walls of the palaces and temples in the ruined cities of Yucatan, Honduras, Mexico, and Guatemala. They are written in unknown characters, which appear to constitute a system of hieroglyphic or pictorial writing, akin probably to that of the Aztec MSS., which as yet have been only imperfectly deciphered.

INSECTA, insects; a class of Annulosa, division Arthropoda. Formerly it was made to include, among other animals, the centipedes and spiders. Now these are made distinct classes, and the Insecta confined to those arthropodous animals which have three pairs of legs; these are affixed to the thorax which is distinctly separated from the head and the abdomen. There are compound and simple eyes. In the highest orders there are four wings; in another order, Diptera, but two; and in several more the wings are rudimentary or totally absent. There is one pair of antennæ. The respiration is by tracheæ. Of the 13 segments, of which a typical insect consists, one constitutes the head, three the thorax, and nine the abdomen. The cutaneous skeleton is composed of chitine. There is generally a more or less complete metamorphosis. Insects exist in all countries. The species existing may be half a million, those known more than 200,000. Most of them are confined to particular regions; some insects, however, like the Painted Lady Butterfly (*Cynthia cardui*), are widely diffused over the world. Insects exert a powerful influence in fertilizing plants. The classification now commonly adopted divides insects thus: Sub-class I., Ametabola: (1) Anoplura, (2) Mallophaga, (3) Collembola, (4) Thysanura. Sub-class II., Hemimetabola: (1) Hemiptera or Rhynchota, (2) Orthoptera, (3) Neuroptera. Sub-class III., Holometabola: (1) Aphaniptera, (2) Diptera, (3) Lepidoptera, (4) Hymenoptera, (5) Strepsiptera, (6) Coleoptera. The old-

est known insects are from the Devonian rocks of this country. They seem to have belonged to the Neuroptera.

INSECTICIDE, one who or that which kills insects. Also a substance or preparation used to kill insects.

INSECTIVORA, an order of Mammalia established by Cuvier, who made it a family of his Carnassiers (Carnivora). It is of higher organization than the Carnivora proper. Huxley arranges it under his Mammals which have a discoidal deciduate placenta, placing it between the Primates and the Cheiroptera. There are usually more than four incisors in each jaw, and the molars have sharp and pointed cusps; the hallux possesses a claw, and has no marked freedom of adduction and abduction. Excepting in one genus, there are well-developed clavicles. The chief families are: (a) *Talpidæ*, (b) *Potamogalidæ*, (c) *Soricidæ*, (d) *Erinaceidæ*, (e) *Centetidæ*, (f) *Macroscelidæ*, and (g) *Galeopithecidæ*. Also a section of Cheiroptera (bats), containing the families *Vespertilionidæ, Rhinolophidæ, Noctilionidæ, and Phyllostomidæ.*

INSECTIVOROUS, or CARNIVOROUS PLANTS, plants which deviate from the usual plant method of obtaining nutriment from the soil and the air, and feed or subsist on insects or other small animals, which they capture by ingenious contrivances. In these respects they make an approach to the animal class of nutriment and modes of food getting, setting traps, as it were, to catch their prey. These traps consist in the leaf, which is modified in some peculiar way to adapt it to the purpose. Among the insect-catching plants, one of the most notable is the Venus fly-trap (*Dionæa muscipula*) of the Carolinas, the separated halves of whose leaves close instantly when their surfaces, which bear irritable hairs, are touched. The edges bear 12 to 20 long teeth, which closely interlock, the whole forming a live insect trap. The fly or other insect which has caused the closure is held till its soft parts are digested and its juices are absorbed by the leaf, when the latter opens again. A digestive secretion is thrown out, and the closed leaf acts as a true stomach, the work of digestion going on for a week or two. The sundews (genus *Drosera*, of which there are about 100 species) are notable for their power of capture. In these the leaves are thickly studded with hair or tentacles, which secrete a clear liquid, which is extremely viscid, holding any insect which touches it. Of a different character are the pitcher-plants, of which there are many kinds in various parts of the world. In these the leaf takes the form of a vase, cup, or tube, with a hood or cover at the top by which the entrance may be closed. Water gathers within these hollow leaves, and, in some cases at least, a liquid secretion from the plant. In some species sweet drops are found on the outside of the leaf leading upward to the mouth, within which other honeyed drops appear. These are arranged in a trail to lure the unsuspecting insect to enter the dangerous cage. On the hood and within the pitcher are stiff hairs or bristles pointing downward, and acting to prevent the prey from crawling out again. The California pitcher-plant has a bright-colored appendage hanging from the opening as a lure to the insect. In some cases the whole leaf is converted into a pitcher. In East India pitcher-plants, *Nepenthes*, of which there are 31 species, are of this character. In these small cups flies and other insects are caught in large numbers. Some plants form their traps by uniting the bases of opposite leaves. Such is the case with *Silphium perfoliatum*, the cup-plant of the Western prairies. The teasel has a similar structure. The bladderworts (*Utricularia*), of which there are about 160 species, are aquatic plants which bear curious little sacs, or bladders, on their dissected leaves, which float in the water. These have open mouths which are lined with bristles, and which, while offering ready entrance to minute insects, prevent their return. When grown in the greenhouse these plants are found to flourish without insect food.

INSIGNIA, the name given to all outward marks of power and dignity, such as the golden crown, the ivory chair, and the 12 lictors with their axes in the time of the Roman kings; the crowns and scepters of European monarchs; the pallium, the infula, the staff, and ring of the higher orders of the Roman Catholic priesthood. The name of insignia is also applied to the decorations worn by the different orders of merit.

INSOLATION, a synonym for sunstroke; also a mode of treatment which consists in exposing the patient to the rays of the sun, and which is had recourse to with a view of rousing the vital forces when languishing, or of producing irritation of the skin. In pharmacy, the drying of chemical and pharmaceutical substances.

INSOLVENCY. See BANKRUPTCY LAWS.

INSPIRATION, in scripture and theology, an extraordinary influence exerted by the Holy Spirit on certain teachers and writers so as to illuminate their understandings, raise and purify their moral natures, and impart a certain divine element to their utterances, whether oral or written. The chief New Testament passages on which the doctrine rests are two. The first is thus rendered in the Authorized Version: "All Scripture [is] given by inspiration of God, and [is] profitable for doctrine," etc.; in the text of the Revised Version this is, "Every Scripture inspired of God [is] also profitable for teaching," etc., and in the margin, "Every Scripture [is] inspired of God and profitable," etc. The second is II Pet. i: 21, "For the prophecy came not in old time by the will of man; but holy men of God spake [as they were] moved by the Holy Ghost" (Authorized Version). "For no prophecy ever came (margin, was brought) by the will of man; but men spake from God, being moved by the Holy Ghost" (Revised Version). The "Scriptures" were, of course, the Old Testament. The great majority of Christians hold what is termed "plenary inspiration"—viz., that the influence of the Holy Ghost on the sacred speakers and writers was such as absolutely to pervade their mind and heart, making their utterances as divine as if they had come from God without human creation. A minority believe that the Scripture writers were preserved from all error only when they uttered moral and spiritual teaching, while in numbers, unimportant points of history, etc., they might err. A few reduce the inspiration of the sacred writers to that possessed by Shakespeare, Milton, Cowper, etc., in other words, identify it with what is termed genius. See BIBLE.

INSTALLATION, the act of installing; the act of investing with an office, charge, or rank, with customary ceremonies; as, the installation of a minister or presiding officer of some deliberative or social body; the state of being installed.

INSTERBURG, a city of Germany in the Province of East Prussia. It is on the left bank of the Angerap river. Before the World War it had important manufactures of linen, machinery, stoves, fertilizers, etc. It has several old churches, a seminary, and a museum. Pop. about 32,000.

INSTINCT, according to Hamilton, "an agent which performs, blindly and ignorantly, a work of intelligence and knowledge." Brougham says that instinct is distinguished from reason, in that "it acts without teaching, either from others — that is instruction, or from the animal itself — that is experience"; "it acts without knowledge of consequences; it acts blindly, and accomplishes a purpose of which the animal is ignorant." In general, we find that instinct and reason prevail in an animal in the inverse ratio to each other. Hence, in man, whose reasoning powers are highly developed, the instincts are few, and manifest themselves principally in children and barbarians. An instinctive action is performed without any consciousness, on the part of the agent, of the end which it serves; it is effected as perfectly the first time as at any subsequent period; and is unsusceptible of any adaptation to particular emergencies; while a reasonable action, on the contrary, is one which always implies a consciousness, on the part of the agent, of the end in view—which becomes only progressively perfect, and which is capable of being variously modified according to existing circumstances.

Three classes of theories have been proposed to account for the instinctive actions: 1. The physical, which makes them depend on the structure and organization of the animal. 2. The psychical, which regards them as the result of mental powers or faculties possessed by the animals, analogous to those of the understanding in man. 3. The supernatural, which views them as workings of an intelligence superior to man, or the Supreme Being.

INSTITUTE, a scientific body; a society or body established under certain rules or regulations for the promotion or furtherance of some particular object; a literary or philosophical society or association; in France, applied to the principal society of this kind, formed in 1795 by the union of the four existing royal academies.

INSTITUTE OF FRANCE, the official name for a group of five learned societies in France which have for their object the encouragement of the liberal arts and the sciences. The five societies comprising the institute are (1) Académie des Inscriptions et Belles-Lettres; (2) Académie Francaise; (3) Académie des Sciences; (4) Académie des Beaux Arts; (5) Académie des Sciences Morales et Politiques. The present organization of the Institute dates from the time of Napoleon I. who was himself a proud member of it. Each of the five societies retains its identity, has charge of its own funds and

has its own government, while the secretaries, the library, and the valuable collections are common to the five. The Duke d' Aumale in 1886 gave to the institute his château and Chantilly together with his wonderful art collection and library. This is the most treasured possession of the Institute. Members are elected by ballot and there are active, honorary, corresponding, foreign associates. The meeting-place of the Institute is the Mazarin Palace, opposite the Louvre.

INSTITUTION, in civil law, the appointment of a debtor as heir of a testator. Also a Christian educational establishment, with a school and college department, for teaching young Hindus and Mohammedans the religion and science of the West, chiefly through the medium of the English tongue. Chiefly Anglo-Indian.

INSTRUMENT, in law, a document or writing, as the means of giving formal expression to an act; a writing expressive of some act, contract, process, or proceeding, as a deed, a contract, a writ, etc. In music, any mechanical contrivance for the production of sound. The musical instruments employed are divided into the following classes: Stringed; wind; and pulsatile. The first and second class require no description. The pulsatile or percussion instruments are the kettle-drums, great drum, side drum, triangle, cymbals, and tambourine.

INSTRUMENTATION, the art of using, in composition, the various instruments and combinations of the ORCHESTRA (*q. v.*).

INSUFFLATION, in the Roman Catholic Church, the breathing, by the priest administering baptism, into the face of the recipient of the sacrament, to signify the new spiritual life which is to be breathed into his soul.

INSULATOR, in electricity, a non-conductor of electricity so placed as to insulate a body. In thermotics, a non-conductor of heat placed so as to prevent the passage of heat to or from a body.

INSURANCE, the act of insuring or assuring against damage or loss; a contract by which a company, in consideration of a sum of money paid, technically called a premium, becomes bound to indemnify the insured or his representatives against loss by certain risks, as fire, shipwreck, etc.

While every known form of insurance is carried on in the United States, there is no general law governing the conduct of the business. Till about 1856, the various companies in each branch of the business carried on their operations according to the principles that prevailed in England, with such modifications as American business methods and interests made necessary. Massachusetts was the first State to insist upon an official supervision of all insurance business transacted within its limits by companies chartered there and elsewhere. The establishment of a State insurance department there, in which was vested the entire control of all insurance business in the State, and the enactment of special laws for the management of the companies, placed the business on a firmer footing than it previously had. In 1859 New York followed the example of Massachusetts, and since then nearly every other State has created an insurance department.

Life Insurance.— In the United States the companies are distinguished as stock or proprietary, mutual, and mixed as to organization, and level premium, natural premium, and assessment as to system of operation. A stock company is one organized on the cash capital subscribed by its projectors. The capital is held as a pledge for the payment of policy holders' claims while premiums are accumulating, and as the liability is limited to the aggregate amount of policies in force it is necessary to provide only a sum sufficient to meet these liabilities. No policy holder has any voice in the management of the company, nor any share in the profits of its business. A mutual company is one constituted by persons who are themselves insured, who corporately insure others, and who as policy holders control the management by electing directors from among themselves, and receive in various forms the annual profits. As these companies are organized without any capital, it is necessary that they should accumulate more quickly than stock companies a fund to meet liabilities; hence they charge premium rates in excess of the amount that will really effect the insurance, viz., a reserve element, a mortality element (together constituting the net premium), and the "loading" or expense element, which is an addition to the real cost of insurance to provide for operating expenses and an occasional excess of mortuary loss.

A form of insurance that has attained wide popularity in the United States is known as co-operative. Among the first if not the very first organization to adopt this form was the order of Free-masonry. The rate of admission was graded by age, assessments of $1 or $1.10 were levied whenever a death occurred, and the beneficiary of a member received $1 for each

member at the time of his death. The order of Odd Fellows then organized similar associations; and some still follow the above plan, while others classify their members by age periods, vary rates of admission and assessment by classes (according to age), and pay different amounts to members of each class. The expense fund, always comparatively small, is made up from the admission fees, the excess of assessment payments, lapses, and — where sufficient funds have accumulated for investment — interest. There are also a number of accident and casualty companies which insure against both disability and death from accidents, paying a stipulated sum weekly for a disability resulting from an accident, and various sums for a death from such cause.

Returning to what are popularly known as the "old line" companies, a regular whole-life policy, payable at the death of the insured only, may be obtained (1) by the payment of a net single premium, or all the premiums that the mortality tables show that the insured would be likely to pay, in one sum; (2) by equal annual payments through life; (3) by five annual payments (the first); (4) by 10 annual payments; (5) by 15 annual payments; and (6) by 20 annual payments. If issued on the mutual plan, cash dividends will be paid every year during the life of the insured; if on the stock plan, no dividends. The mutual plan carries the highest rate of premium. A term policy is one given for a specified number of years and amount, and is paid only when death occurs within the specified term. It is in some respects similar to an endowment policy, but in others radically different. An endowment policy is paid at death during the term, or to the insured if living at the end of the term. A joint-life policy is payable on the death of one of two or more persons on whose joint lives the insurance was made. A simple annuity policy provides that in consideration of the payment at one time of a specified gross sum, the company will pay to the annuitant a stipulated sum annually, either for a stated term or during life; and a survivorship annuity policy, sometimes taken by one partner for another, by a debtor for a creditor, and otherwise for a business security, guarantees the payment of a stated sum to the person named by the person taking the policy during the period in which the nominee survives the insured. A tontine policy is similar in form to the ordinary life, limited payment life, or endowment policy. No dividend is allowed or paid till the insured has survived the completion of the tontine period, and then only when the policy has been kept alive by premium payments, and the policy is not regarded as possessing a surrender value in a paid-up policy or otherwise previous to the completion of the tontine period. If the insured die before the completion of the tontine period (or term of years specified in the policy), the beneficiary will receive only the sum indicated in the policy; but if the insured survive the period he will share with all other members of his class in the equitable division of the accumulated dividends, and may then surrender his policy for a cash payment by the company, or convert it into any other desired form of insurance. A semi-tontine policy differs from a pure tontine in this respect: It contains the same stipulation on the non-payment of dividends, but is treated as ordinary policies in regard to providing a paid-up policy in case of a lapse, or failure to pay the premiums. The renewable term life and quarterly renewable term life policies have been outlined above in connection with Sheppard Homans's work.

Fire Insurance.— The laws and practices governing this form of insurance approach much nearer to uniformity than those of life insurance. There are very few life insurance companies chartered outside the United States doing business here; but nearly every large fire insurance company in the world has established offices in the principal American cities. The various companies are distinguished as stock and mutual as to organization; and fire exclusively, and fire and marine as to field of operation. The plan of organization of the two forms is practically identical with that of life insurance already explained. In many large cities the various fire insurance companies combine to provide an annual fund with which a "fire insurance patrol," or a "salvage corps," is maintained, to co-operate with local fire departments.

Companies are not liable for loss caused directly or indirectly by invasion, insurrection, riot, civil war, or commotion, military or usurped power, or by order of any civil authority; by theft; by neglect of the insured to use all reasonable means to save and preserve the property at and after a fire or when the property is endangered by fire in neighboring premises; or (unless fire ensues, and in that event, for the damage by fire only) by explosion of any kind, or lightning; but liability for direct damage by lightning may be assumed by specific agreement.

Marine insurance proper covers the

ship, the cargo, the freight that the ship earns, and the profits that the cargo brings.

Miscellaneous Insurance.— Of the miscellaneous forms of insurance the accident is the oldest. The age of the insured is limited to 16 to 65 years, and women and girls as a rule are insured against death by accident only. The next oldest form is plate-glass insurance, in which companies insure against accidental breakage, somewhat on the abandonment plan of marine companies. Breakage in consequence of fire or heat therefrom is now so frequently insured against by regular fire companies by special contract in the policy, that strictly plate-glass insurance companies usually exclude fire from insurance risks. There are also a few companies making a specialty of insuring farm buildings against loss or damage by fire and lightning; and some in the Western States, organized as associations by farmers, on the mutual plan, that insure certain grades and kinds of cattle and standing crops against loss or damage from specified causes. Among the more recently established forms of insurance is the casualty, based on the legal liability of employers of labor, in which the company insures an employe against accident or death resulting from any cause for which the employer is responsible, and makes settlement with the injured and those who may be killed or die from the results of the injury. A clerk, public officer, or other person required to give bonds for the faithful performance of duty, may have his fidelity insured by another style of company, whose guarantees are received the same as regularly executed bonds; and the clearness of a title to real estate may be insured by a title and guarantee company, which makes all the searches necessary to establish a clear title and guarantee its legality.

INTAGLIO, (-täl'yō), a term in art, the opposite of relief, meaning the representation of a subject by hollowing it out in a gem or other substance, so that an impression taken from the engraving presents the appearance of a bas-relief. See GEM.

INTEGRAL CALCULUS, a branch of mathematics, the converse of the differential calculus. Having a given or known differential, the integral calculus has for its object to find a function such that, being differentiated, it will produce the given differential. Such expression is called the integral of the differential. The operation of finding the primitive function or integral is called integration. Besides the method of finding the integrals of given differentials, the integral calculus is also applied to various branches of mathematics, as well as to almost every branch of natural philosophy and engineering.

INTELLECT, that faculty of the human soul or mind by which it receives or comprehends the ideas communicated to it by the senses or by perception, or other means, as distinguished from the power to feel and to will; also the capacity for higher forms of knowledge as distinguished from the power to perceive and imagine. In the plural, wits, senses; as, to be disordered in the intellects.

INTERCALAR, or **INTERCALARY**, in chronology, used of months, or shorter periods of time, inserted into the calendar to make the astronomical and civil years more nearly coincide. Romulus is said to have intercalated two months into the Roman year, which had hitherto consisted of 10 months only.

INTERCHURCH WORLD MOVEMENT, an attempt to unite some of the main enterprises of the Protestant churches, so as to avoid duplication of effort and waste of funds. The movement was started by the Board of Foreign Missions of the Presbyterian Church in December, 1918, when it invited the various Protestant denominations to send representatives to a meeting in New York to confer upon the need for co-operation among the churches. The result of the conference was the launching of the Interchurch World Movement with the object not of any organic union of the denominations but the attempt to see how much can be done effectively in common. A general committee from all the churches was selected of which S. Earl Taylor became the general secretary. As head of the Methodist Centenary Fund he had shown great executive capacity and organizing ability. The Committee set itself to work to first make a survey of world conditions and it has not completed this phase of the work. Friction appeared among the various denominations which resulted in a practical abandonment of the work in 1920.

INTERCOMMUNING, LETTERS OF, an ancient writ issued by the Scotch Privy-council warning persons not to harbor rebels.

INTERDICT, in old Roman civil law, a decree of the prætor pronounced between two litigants sometimes enjoining, but more frequently prohibiting, some-

thing to be done. The interdiction of any one from fire and water — *i. e.*, from obtaining those necessaries — at Rome was tantamount to banishment from the city.

In Roman Catholic ecclesiastical law and history, an ecclesiastical censure by which persons are debarred from "the use of certain sacraments, from all the divine offices, and from Christian burial." Interdicts seem to have commenced with bishops in the 9th century (e. g. Hincmar of Laon, 869). On March 23, 1208, Pope Innocent III. placed England under an interdict, which was not removed till Dec. 6, 1213. On Dec. 17, 1538, Pope Paul III. published a bull excommunicating and deposing Henry VIII., and placing the kingdom under an interdict. The Canon Law gradually introduced mitigations in the severity of interdicts. Baptisms and confirmations might be administered to persons in danger of death; marriage was permitted, but without solemnities; faithful ecclesiastics might be buried in the churchyard, but in silence; priests might be ordained if there were not enough previously; there might be Low Mass every week, and High Mass at the five great festivals of Christmas, Easter, Whitsunday, Corpus Christi, and the Assumption. In April, 1606, Pope Paul V. placed the republic of Venice under an interdict, which was met by determined and effectual resistance from the government, and soon afterward interdicts fell into disuse.

INTERDICT, in Scotch law, an order issued by the Court of Session to stop or prohibit a person from doing an illegal or wrongful act. The party applying for it must have both title and interest to object to the act complained of — *i. e.*, he must be more than a mere stranger. The principles on which it is granted in Scotland are substantially the same as those in which the parallel writ of injunction is granted by English and American courts.

INTEREST, an allowance made for the use of borrowed money. The money on which interest is to be paid, is called the principal. The money paid is called the interest. The principal and interest, taken together, are called the amount. The ratio of the principal to the interest, per annum, is the rate or rate per cent. Interest is either simple or compound. Simple interest is the interest on the principal, during the time of the loan. Compound interest is the interest, not only on the principal, but on the interest also, as it falls due. The amount of interest legally obtainable varies in the States and Territories of the United States, according to the laws of the respective States.

The exaction of interest was prohibited in England in 1197, and again in 1436. It was legalized, the rate being fixed at 10 per cent., in 1545, prohibited in 1552, restored in 1570, and reduced to 3 per cent. in 1713. A law passed on Aug. 10, 1854, removed all restrictions on its amount.

In law, chattel real, as a lease for a given number of years, or a future estate; also any estate, right, or title in realty.

INTERLAKEN, (in'ter-lä-ken) ("between the lakes"), a village of Switzerland, in the beautiful valley of the Aar, between Lakes Thun and Brienz. Along the Walnut Avenue or Highway between the lakes there is an almost uninterrupted line of hotels and boarding-houses. The village is visited anually by 20,000 to 30,000 tourists, who make it their starting-point for reaching many of the most wonderful sights that the country affords, especially the Bernese Oberland, where are the Staubbach, Lauterbrunnen, the Grindelwald glaciers, etc. The nucleus of the village is a former monastery (founded 1130). Pop. about 4,000.

INTERLOCUTOR, in Scotch law, a finding or judgment of a judge or court in a cause.

INTERLUDE, in music, a short melodious phrase played by the organist (generally extempore) between the verses of a psalm or hymn tune. It is now in disuse in England. In French cathedrals a long interlude is played between the verses of the "Magnificat." In the German Protestant Church an interlude (*Zwischenspiel*) is often played between each line of the verse. Examples of its artistic use may be found in Mendelssohn's "Elijah" ("Cast thy burthen") and "St. Paul" ("Sleepers, wake").

INTERMEZZO, (-met'zō), in music, an interlude; a short composition of a lively character played between the parts of a more important work, or between the acts of a drama, etc.

INTERMITTENT FEVER. See AGUE.

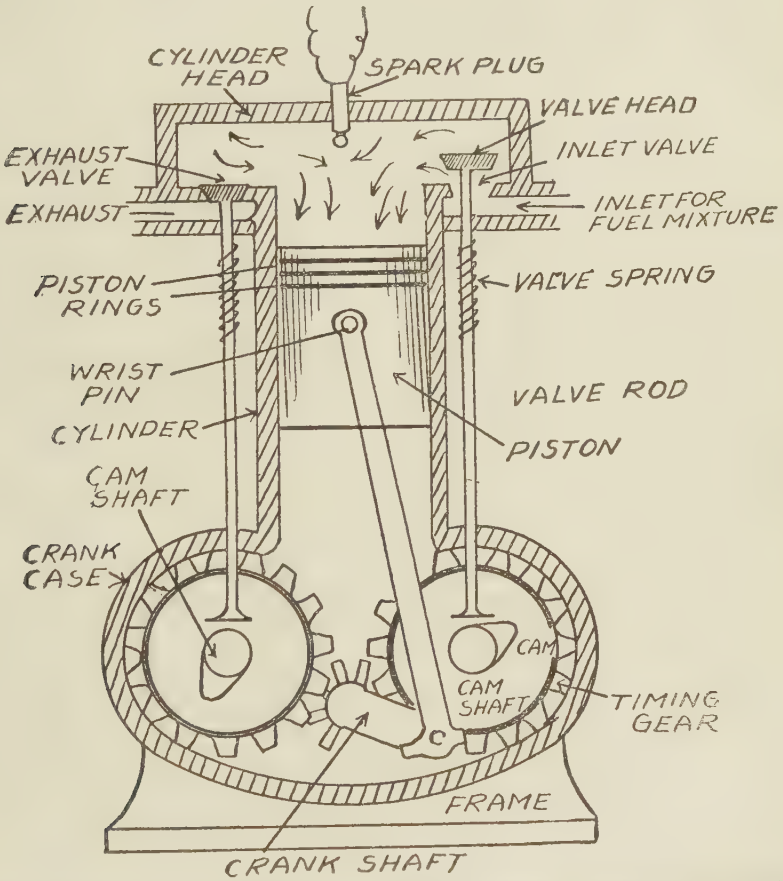
INTERNAL COMBUSTION ENGINE, a type of prime mover in which the actuating energy, in the form of heat, is generated by combustion within the cylinder of the engine.

The commercial introduction and improvements of the internal combustion

engine have been comparatively recent, as it was only in 1878 that Otto placed the first important commercial gas engines upon the market. In his engine, as in the common motor of to-day, the gas was compressed before it was ignited.

The two great classes into which internal combustion engines may be divided are:

done at approximately the end of the compression; fourth, the expansion of the gas, resulting from combustion, which forces the piston down; and fifth and last, forcing out the burnt gases on the up stroke of the piston. This type of motor, which requires four strokes of the piston to complete its cycle, is known as a four-cycle motor, while some motors with special valve arrangements and



CROSS SECTION OF FOUR-STROKE GASOLINE INTERNAL COMBUSTION ENGINE

A. Those in which the ignition of the fuel occurs at constant volume.

B. Those in which the ignition of the fuel occurs at constant pressure.

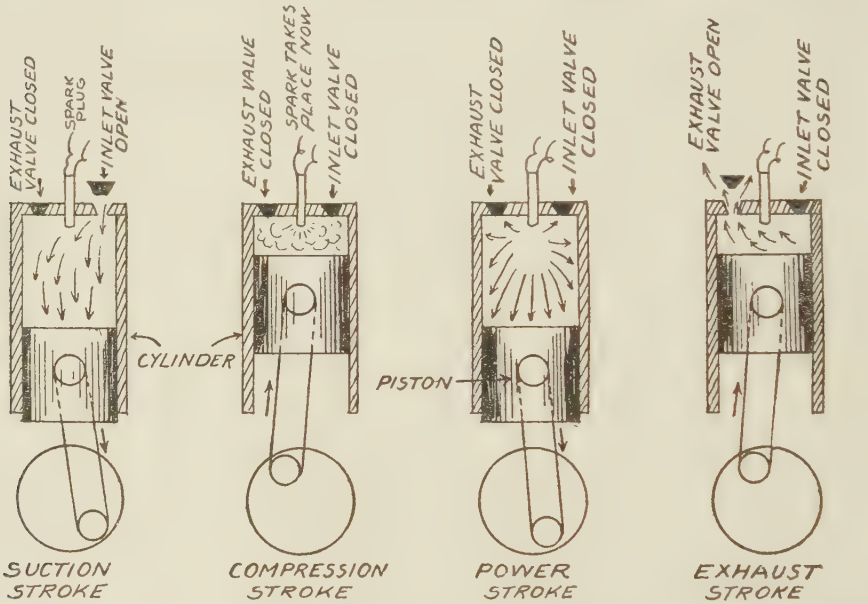
The common gasoline motor of to-day is of the first type, and usually operates under what is known as the Otto cycle: first, charging the cylinder with fuel, which is done on a down stroke of the piston; second, the compression of the fuel on the up stroke of the piston; third, the ignition of the fuel, which is

deflectors go through a complete cycle in two strokes.

Gasoline is the common fuel of this type of motor, although there are models designed to operate on natural gas, alcohol, and kerosene. The fuel is mixed with air in a carburetor or similar device. The entrance of the fuel into the cylinder, as well as the expulsion of burnt gases, is controlled by valves, which may be of the poppet and cam type, or of the sleeve variety. In a

modern motor the fuel is ignited by an electric spark, properly timed, which is usually furnished by a storage battery and intensified by a coil, or generated by a magneto. The lubricating system is usually either of the force feed or the splash type, and a great majority of the engines are water jacketed for cooling. This type of motor is used for motor vehicles of all types, for small power plants, airplanes, and motor boats.

The typical internal combustion engine of the second type is the Diesel Engine, invented by a German, Rudolf Diesel, in 1898. In the Diesel Engine air is drawn into the cylinder, compressed to about



SCHEMATIC DIAGRAM SHOWING HOW A FOUR-STROKE CYCLE SINGLE-CYLINDER INTERNAL COMBUSTION ENGINE WORKS

500 pounds per square inch, which creates a temperature of about 1000° F., then at the beginning of the down stroke of the motor, oil under high pressure is sprayed into the cylinder, where it is ignited by the heat of the air in the cylinder. A constant pressure is maintained during expansion. On the up stroke of the piston the burnt gases are expelled from the cylinder, and the cycle is repeated. This type of engine is practical only in large sizes, and is used for stationary power plants, and for heavy marine duty. It may be either vertical or horizontal, and recent experimentation has improved the speed control and simplified starting, which were the drawbacks of early models. A very high fuel economy is possible with this type of motor.

INTERNATIONAL INSTITUTE OF AGRICULTURE, an institution located at Rome and having for its object the collecting and distributing of information and statistics about Agriculture. Founded by an American, David Lubin of California, who, after several vain attempts to secure government support, persuaded King Victor Emmanuel of Italy to give it his patronage in 1905. The King has endowed the institution with funds which give it an annual income of $60,000 and the Italian Government has erected a handsome building for its home. A general assembly of delegates is held every two years and over 40 different countries are now represented in its deliberations. In 1913 the assembly discussed methods of crop reporting, an international service of statistics, and made proposals to the departments of agriculture of the various nations concerning the control of plant diseases. The institute has collected a valuable library dealing with all phases of agricultural life, issuing weekly bulletins of books received or published on the subject. It has also aided the various countries in any special agricultural works in which it happens to be engaged, recommending experts and

placing at their disposal its valuable library.

INTERNATIONAL LANGUAGES, languages artificially formed in order to do away with the difficulties of communication between people whose natural languages are different. Most of the schemes proposed intend merely to help business men and travelers, there is no aim to produce a literature in a language artificially formed. Early attempts to make an international language date back to Diderot and the French Revolution, but perhaps the most famous of them are Volapük, Bolak or the Blue Language and Esperanto. The first, Volapük, was invented by Schleyer in 1879 and attained considerable popularity, but the fact that it copied English too closely aroused the opposition of the Continent. The second, Bolak, was formed by M. Bollack, a merchant of Paris who devoted a lifetime to the task and produced nine ponderous volumes on the subject. The difficulty with the Blue Language as it is called is that it is almost if not quite as difficult to learn as a foreign language and consequently has proved of little practical value. Esperanto is the international language most in vogue at the present time, its great advantage being that it makes considerable use of living languages. It eliminates what is special and irregular in the various languages, and retains that which is regular. Thus Esperanto is the easiest to acquire of any of these artificially formed languages. Americans have since proposed two other international languages, Ro by Foster (1910), and Pangerman by Molee (1911).

INTERNAL IMPROVEMENTS. From the beginning of the United States Government till 1860, the question of a system of internal improvements carried on by the general Government was a party question. The Republican (Democratic-Republican), and after it the Democratic party as the party of strict construction, opposed such a system. Improvements, the property in which remains in the general government, as lighthouses, etc., were not opposed, but improvements on rivers and roads, the benefit of which passes to the States, were the objects of attack. Most of the earlier States were on the sea-coast, and the improvement of their harbors was at first carried on by means of tonnage taxes on the commerce of the port, levied with the consent of Congress (see Constitution, Article I, section 10, clause 3). This practice was, in isolated cases, continued till the middle of the 19th century; it was generally discontinued much earlier. As early as 1806 the improvement of roads by the National Government was conceived in order to indemnify the interior States, and in 1823, the improvement by the National Government directly of rivers and harbors was begun. The Republican (Democratic-Republican) Presidents, Jefferson, Madison, and Monroe, opposed these improvements as unconstitutional, though toward the end of his term Monroe became more favorable to the system. John Quincy Adams was a warm advocate thereof and Jackson its stern opponent. Though the Democrats opposed any general system of improvements, they continued to apply funds to particular purposes. The Whigs now adopted the system originated by the Democrat, Jackson, viz., the distribution of the surplus among the States. But once did the Whigs attempt to put this into execution, and then, in 1841, the veto of President Tyler, at odds with his party in Congress, put an end to that scheme, which has not since been revived. The introduction of railroads has partly done away with the question of improvements for roads, while a system of assistance to the railroads, by means of the grant of land along the line of their route, has sprung up. From this policy a revulsion has set in and the present tendency is to the recovery of as much of the land so granted as has not been earned by a strict compliance with the terms of the grant. To this both of the great political parties stand committed.

INTERNAL REVENUE, the moneys collected under the internal revenue bureau in the Treasury Department of the United States. The term includes most of the receipts from national taxes, except customs duties; but as commonly restricted it does not embrace receipts from the sale of public lands, patent fees, postal receipts, etc., which are really sources of internal revenue. Taxes are apportioned among the States only in proportion to the population. The first internal revenue tax was by act of March 3, 1791, which provided for a tax on distilled spirits of domestic manufacture discriminating in favor of those produced from domestic materials, and against those produced from foreign materials. The enforcement of this act led to the Whisky Insurrection in 1791. In 1794 taxes were levied on carriages, retail selling of wines and foreign distilled liquors, on snuff, sugar and sales at auction. In 1797 taxes were laid on stamped vellum, parchment and paper. In 1798 the first direct tax of its kind,

one of $2,000,000, was apportioned among the States, and it was proposed that it should be levied on dwelling-houses, slaves and land. The tax of 1791 was levied to establish the principle of national taxation; that of 1794 from fear of hostilities with England; that of 1798 because of the threatened war with France. On Jefferson's accession to the presidency, and on his recommendation, all internal taxes were repealed in 1802, and no others were authorized till 1813. Then the war with England necessitated an increased revenue and most of the old taxes were reimposed. These were to cease a year after the close of the war, for the maintenance of which they were levied; but they were afterward continued for a while for the payment of the national debt. In 1814 increased need of money led to an augmentation in the amount of these direct and other internal taxes, and to the first imposition of taxes on domestic manufactures other than sugar, snuff and spirits, such as iron, candles, hats, playing-cards, umbrellas, beer, ale, harness, boots, plate, household furniture, gold and silver watches, etc. The return of peace brought the abolition of direct taxes, excise duties and other internal taxes, and from 1818 to 1861 none of these were levied.

The Civil War forced a renewal of the internal revenue system, and in 1861 a direct tax of $20,000,000 was apportioned among the States, though it was not collected till a year later. On July 1, 1862, an exhaustive internal revenue act was passed, levying taxes on all sorts and kinds of articles too numerous to mention, on trades, incomes, sales, manufactures, legacies, etc. The bill was ill-considered and needed frequent modifications. More than 25 acts on the same subject were passed within the next six years. A few industries were taxed out of existence, but all were more or less disturbed. However, enormous revenues were raised and the people submitted without opposition to the necessities of the case. Extensive reductions were made after the war had ceased by various acts in 1866, 1867 and 1868. Further reductions were made in 1872. By the Revenue Act approved June 13, 1898, special taxes were levied to meet the expenses of the war with Spain.

At the declaration of war against Germany, in 1917, the necessity arose of increasing the revenue to a volume hitherto unprecedented. Congress passed new measures and increased the taxation under old laws. Among the new legislations was an income tax, an emergency revenue tax, and excess profits taxes. From these and other sources there was received in 1918 the vast sum of $3,696,043,484 in internal revenue. This was further increased in 1919 to $3,840,230,994. These sums were derived chiefly from the income and profits tax, which in 1919 amounted to $2,600,783,902; the tax on distilled spirits and alcoholic beverages amounting to $483,050,854; the tax on tobacco and tobacco manufacture amounting to $209,391,000; and the tax on public utilities amounting to $237,839,572. The collection of these taxes, especially those on excess profits and on luxuries, resulted in considerable dissatisfaction. It was charged that the excess profits tax was largely responsible for the high cost of food and other commodities, and plans were made by the financial committee in the House and the Senate to modify or abolish entirely certain of these objectionable taxes in 1921.

INTERNATIONAL, THE. See SOCIALISM.

INTERNATIONAL COPYRIGHT. See COPYRIGHT.

INTERNATIONAL LAW, that code of rules by which nations have agreed to be governed in their relations with each other. It differs from the codes of law governing the internal affairs of individual states in the fact that its rules are less definitely fixed and that there is no authority behind and above it, with power to interpret or enforce its provisions and to punish those guilty of violating them. In the absence of such judicial and administrative authority, it depends for its vitality upon the good faith and mutual understanding of those by whom and for whom it has been created, quickened by a wholesome respect for the opinion of the world and an equally wholesome realization of the consequences which may follow upon its violation. The world has recently had a striking demonstration of what these consequences may be in an extreme case, and as a result of this demonstration it is safe to say that International Law which in 1914 seemed to be dead, is in 1921 more vigorously alive than it has ever been at any previous period in its history.

The fundamental *principles* of International Law are fairly well established. In theory they coincide with the principles of justice, humanity, courtesy and reasonableness which are supposed to regulate the relations of individuals in their intercourse with each other in any civilized and especially in any Christian community. The rules governing the ap-

plication of the principles to specific questions arising between nations are less clear, and it is in this field chiefly that differences arise between nations, passing frequently into disputes and not infrequently into wars. It is in this field, also, that progress is being constantly made through international conferences and arbitral decisions. If the progress thus far made does not give promise of immediate universal peace, it gives promise at least of a general understanding such as will make it constantly more difficult to justify war by manufactured grievances.

The beginnings of International Law coincide with the beginnings of international relations. No sort of peaceful intercourse between nations or cities or even tribes can be conceived without assuming some rules governing such intercourse. A well developed, though limited, code existed between the city-states of Greece of which Athens and Sparta were the leaders, and between the Latin city-states of early Roman history. With the extension of the Roman power until it covered the civilized world, the necessity for "international" rules ceased to exist. The law of Rome was the law of the world.

In the first few centuries following the fall of Rome, Roman civilization and culture, including Roman Law, were assimilated by the new nations of Western Europe. With the conquests of Charlemagne and his assumption of the imperial title in 800, the Roman tradition took on a new lease of life; and for many centuries thereafter the fiction persisted of a "Holy Roman Empire" with a dual government of Church and State, claiming universal sovereignty and so keeping alive the conception of a super-state and a super-law. Thus it came about that when the modern world, in the middle of the seventeenth century emerged from the desolation of the Thirty-Years War, and thoughtful men began to seek for something in the way of an agreement that should make for a better understanding between nations, they found a code existing whose underlying principles could be adapted to internationalization, and a world to which the conception of such internationalization was not entirely strange. They found existing also a treatise on "The Law of Peace and War" in which the transition from national to international law was indicated with remarkable precision and a new and broader code developed in which full weight was given to international customs already existing and to the principles of humanity and morality which are the basis of Christian civilization and ethics. This treatise, published at Paris in 1625 by a Dutch jurist, Hugo Grotius, the "Father of International Law," marks the beginning of a new era in international relations and in the development of International Law as a *science*.

Among the writers who have followed Grotius, the following are deserving of mention as having contributed something of precept or enlightenment to the subject:

Pufendorf, 1632–1694; Bynkershoek, 1673–1743; Vattel, 1714–1767; Wheaton, 1785–1848; Kent, 1763–1847; and more recently, the following: W. E. Hall, T. J. Lawrence, L. Oppenheim, A. P. Higgins, Englishmen; and J. B. Moore, G. G. Wilson, and T. D. Woolsey, Americans.

Among the most important subjects dealt with by International Law may be mentioned the following:

The rights and privileges of the subjects of one country residing in another country.

The rights and privileges of Ambassadors, Envoys and Consuls.

The Extradition of criminals.

Rules of Commerce and Navigation.

Rules for international postal systems.

Rules of Land and Sea Warfare; including neutral and belligerent rights and responsibilities, blockade, visit and search, contraband of war, immunity of hospitals, ambulances, etc.

The most important advances in International Law since the days of Grotius have come about through international conferences, of which many have been held during the last three-quarters of a century. The most notable of these are the following:

I. *The Peace Conference following the Crimean War.*

This Conference appended to the treaty of peace a declaration known as "The Declaration of Paris" in which the following important principles were adopted by the signatory powers and proposed for acceptance by the world.

(1) Privateering is and remains abolished.

(2) A neutral flag protects enemy goods from capture on the sea, except contraband of war.

(3) Neutral goods under an enemy's flag are not subject to capture at sea, except contraband of war.

(4) A Blockade to be binding must be effective.

The United States refused to accept the Declaration of Paris, not because of any objection to its provisions, but because provisions (2) and (3) did not go

far enough. The historical American policy has always favored the complete exemption from capture of *private* property on the sea, whether belonging to neutral or enemy subjects, always with the exception of contraband of war. Thus the immunity granted by the Declaration of Paris to enemy property only when under a neutral flag was not acceptable. The doctrine that all private property except contraband is immune from capture at sea is the doctrine, much talked of and little understood, of *"The Freedom of the Seas."*

II. The Geneva Conference of 1864.

This was a conference assembled to formulate rules for ameliorating the condition of the sick and wounded in time of war. It agreed upon a series of rules which, with some extensions growing out of later conferences, have been accepted by all civilized nations. Out of this conference came the *"Red Cross"* organization with its widely varied activities covering practically the whole world and with its sign, a red cross on a white ground, which is supposed to protect hospitals, ambulances, etc., with their operating staffs. The violations of the Red Cross flag are among the most barbarous of the acts of Germany during the World War.

III. The First Hague Conference, 1899.

This Conference called upon the initiative of the Czar of Russia for the consideration of certain large questions of International Law and relations adopted three conventions, dealing with:

(1) The creation of an International Court of Arbitration for the settlement of international disputes without recourse to war.

(2) Revision and improvement of the Laws of War on Land.

(3) The adaptation of the rules of the Geneva Convention to warfare on the sea.

IV. The Second Hague Conference, 1907.

This Conference revised, extended and confirmed the work of the First Hague Conference and took up a large number of new questions among the most important of which were:

(1) The rights and duties of neutral states in time of war.

(2) The use of submarine contact-mines.

(3) The bombardment of undefended places by Naval forces.

(4) The establishment of an International Court of Appeal for Prize cases.

New principles and practices in International Law are frequently established, either temporarily or permanently, by the acts or declarations of a single government. It is interesting to note that the United States has in a number of important instances assumed leadership of this character, and always along lines of enlightened liberality and unselfishness. The following are among the most notable cases of this kind:

> The proclamation of neutrality as between Great Britain and France issued by Washington in 1793 constituted a new epoch in the usages of nations and has since been adopted as a model by all other governments. The Monroe Doctrine of 1820 has protected the weak republics of this continent against the monarchial governments of Europe for a hundred years.
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> The "Laws of Land Warfare," issued by the United States Government in 1863 for the government of its armies in the field represented an immense advance upon previous rules and have been copied by all other military powers and followed by all except Germany.
>
> Secretary Hay's policy of the "Open Door" for China has been generally accepted, though not always followed, as establishing the attitude of the world toward the troublesome "Far Eastern Question."
>
> As has been already explained, the United States has always occupied advanced ground on the "Freedom of the Seas."

The developments of the World War have modified the conditions of warfare in many directions and introduced many new factors, some of them of great significance. Both submarine and aerial warfare have taken on a character never before anticipated, or anticipated only as possible developments of the indefinite future. Contact submarine mines, heretofore limited in their application to shoal waters bordering a coast line, have been planted by thousands in the open sea, in depths up to hundreds of feet. The dropping of bombs from airships on crowded and undefended cities, contrary to all existing laws of warfare, has been common. The use of asphyxiating gases not only in shells projected from guns but in great waves sent down upon an enemy's trenches and battle lines before a favoring breeze, has been, perhaps, the most appalling feature of all. But the tendency of all has been in the same direction,—away from every feature that in past wars has tended to soften in

some degree the inevitable horrors of warfare and to preserve a semblance of humanity and even of chivalry. The world has now before it the great problem of assimilating into its scheme of Law such of these features as it may elect to retain, with suitable rules for their employment; and rejecting, once for all, those which it may see fit to eliminate. This is the task for a third Hague Conference, and the sooner such a Conference is assembled, the better it will be for humanity. It is true, of course, that the dictates of a new conference may be defied by some future Germany, but there is much reason to hope that the lessons of the recent war and its results will never be entirely forgotten.

INTERNATIONAL TRADE, the theory of which has caused more confusion among economists, statesmen and men of affairs than any other economic problem. The important question, which has been the bone of controversy, is: whether or not that country which has the balance of trade in its favor is really the gainer, or in other words, is it better for a country to export more than it imports, receiving the balance in gold?

At one time, it was universally believed, and it still is, to a wide extent, that the gain which any country derived from foreign trade could be estimated by the amount of money it brought into the country. Therefore it was the policy of every government to encourage exports and discourage imports, the idea being that the more exports exceeded imports, the more money, or wealth, would be brought into the country. This was having the "balance of trade" in its favor. If, on the other hand, imports exceeded exports, obviously gold would have to be sent out of the country and, if this continued for a long period, so it was believed, the country would be impoverished. To guard against this, many governments gave bounties to exporters and heavy duties were imposed on imports, leading to a system of protection.

Adam Smith, in his "Wealth of Nations," was the first to expose this fallacy, with so much conviction that largely through his influence England adopted a free trade policy, and those countries which follow a protectionist policy do so, not to interfere with foreign trade, but to encourage certain industries.

The fallacy was based on the theory, or belief, that gold was actual wealth, whereas it merely represents wealth. Therefore, that gold which a country receives for the "balance of trade" in its favor, represents the difference in value between the goods it has imported and those which it has exported. Having sent out of the country more actual wealth than it has received in return, obviously it is the poorer to the extent of just that difference. If this balance is only temporary, no harm results, as, at a later date, heavier imports will make up for the deficit. But should there be a continuous tendency to accumulate gold, paid for a continuous excess of exports over imports, then the country will gradually grow poorer, unless, as has been the case with England, this gold is invested in foreign countries. Otherwise the increasing supply of gold has a tendency to decrease in value intrinsically, and in the wealth it represents. The nation which hoards gold, which it has received in exchange for its wealth, is inclined toward the condition of the miser, who turns all his possessions into money and, while theoretically very rich, is as poor as the lowest paid laborer. The highest benefits from international trade, therefore, are attained where the exchange of goods is actually trade; that is, where exports are paid for by their equivalent in value with imports.

INTERPARLIAMENTARY UNION FOR INTERNATIONAL ARBITRATION, an association of members of the legislative branch of the different countries to promote arbitration in international disputes. Formed in 1888 it is chiefly famous for its St. Louis meeting in 1904, where it adopted a set of resolutions urging the President of the United States to call a second meeting of the Hague Conference. In compliance with this wish the President called the conference which in the main adhered to the program of the St. Louis meeting of the Interparliamentary Union. In 1906, at London, the Union drew up a model arbitration treaty for the consideration of the nations.

INTERPLEADER, in law: (1) One who interpleads. (2) The pleading or discussion of a point incidentally arising, as it were, between or in the middle of a case, before the principal cause is determined. Interpleader is allowed that the defendant may not be charged to two severally where no fault is in him; as where one party brings detinue against the defendant upon a bailment of goods, and another against him upon trover, there shall be interpleader to ascertain who has right to his action.

INTERPRETATION, the act of interpreting, expounding, or explaining that

which is unintelligible, not understood, or not obvious; the term having a special legal signification as well as a general one. In mathematics, the process of explaining results arrived at by the application of mathematical rules. When, for example, an algebraic definition is laid down, there is frequently some restriction implied in making the definition, so that the result to which it leads presents more cases than can be explained by it, or even than was contemplated by it. Thus the abbreviation of aa, aaa, into a^2, a^3, and the rules which spring from it, lead to results of the form a^{-2}, a^0, $a^{1/2}$, etc. These results, until interpreted, are without any intelligent algebraic meaning.

INTERSTATE COMMERCE, a term which technically means the higher authority of the Federal Government over that of the individual States in matters of trade and commerce passing over State boundaries. This higher authority is based on article I, Section 8, clause 3, of the Constitution of the United States, which declares that the Federal Government, through Congress, shall have the right "to regulate commerce with foreign nations and among the several States, and with the Indian tribes." This clause gives Congress jurisdiction over all "highways"; railroads, rivers, canals, etc., passing from one State to another. As an instance, when the New York Legislature, many years ago, before court decisions had determined exactly the limits of Federal jurisdiction, attempted to grant the exclusive right to navigate State waterways to certain private parties, a Supreme Court decision, based on the clause in the Federal Constitution, rendered this particular piece of legislation void. By this, and similar decisions, Congress has jurisdiction over harbors, even though they may be inclosed entirely by the territory of one state, and has the authority to grant concessions for harbor works. It may authorize and compel the removal of rocks or the dredging of rivers, to facilitate transportation and passenger traffic. It is within the jurisdiction of Congress to guard against dangers to the lives of travelers, to the extent that it can compel steamship or railroad companies to adopt safety appliances, should it deem such devices effective. Even telephone and telegraph services are included, as being inter-state in character.

Based on this fundamental law, the authority of Congress extends to a larger proportion of private business than had probably ever been foreseen by the fathers of the country. For not only may it regulate inter-state transportation and passenger service on railroads, but it may also impose conditions on how business may be done between firms in one State and its patrons, or other firms, in other parts of the country. A particular instance is given in the inspection of meat packed by the Chicago packers. Unsanitary conditions being suspected in this industry, endangering the health of the people, Congress had the constitutional right to intervene and compel the packers to abide by certain sanitary rules that were imposed. A great deal of Federal legislation has been passed, based on this Constitutional clause, the most important of which is the Sherman Anti-Trust Law, passed in 1890, which forbids combinations of manufacturers or traders tending toward monopoly, and so "restraining" the natural laws of supply and demand. Another illustration of this kind of legislation is the White Slave Act, which enables the Federal Government to protect young girls by its power to prosecute those who bring young women from one State to another for immoral purposes. As another illustration of the subservience of the States to the Federal Constitution, Iowa, which had passed a prohibition law, was unable to prevent liquor being brought into the State until Congress came to her relief by a special act forbidding the importation of liquors into prohibition States.

INTERSTATE COMMERCE COMMISSION, a body of nine members, authorized by Federal law to regulate inter-state trade, transportation, etc., in accordance with the clause in the Constitution placing commerce between the States under the jurisdiction of Congress. The original act to regulate commerce, approved Feb. 4, 1887, provided for a commission consisting of five members. By various amendatory and supplementary enactments the powers of the commission have been increased and the scope of the regulating statute materially widened. Among the more important of these enactments are the acts of March 2, 1889; the Elkins Act, approved Feb. 19, 1903; the Hepburn Act, approved June 29, 1906; the Mann-Elkins Act of June 18, 1910; the acts of Aug. 24, 1912, and May 29 and Aug. 9, 1917; and the Transportation Act, 1920. The number of Commissioners was increased under the act of June 29, 1906, to 7 members; under the act of Aug. 9, 1917, to 9 members; and under the Transportation Act, 1920, to 11 members. (See INTERSTATE COMMERCE.)

INTERSTATE COMMERCE LAW, THE. See INTERSTATE COMMERCE COMMISSION: RAILWAYS.

The law creating the Commission, passed by Congress in 1887, and based on the above clause, was the result of a demand voiced by the farmers of the Middle West, between whom and the railroad companies considerable friction over freight rates had developed. In some cases extortionate freight rates were charged, making the growers of produce for distant markets economically dependent on the railroads.

With regard to railroads, sleeping car companies and express companies, no free transportation was permitted, with certain exceptions. Railroad companies were forbidden to transport free of charge commodities belonging to themselves, excepting timber and equipment. Railroad companies must lay switches to accommodate any and all parties desiring to ship freight. There must be no discrimination in favor of or against any private firm or corporation, desiring to ship goods. There must be no special charges for short hauls. There must be no pooling of freight and division of earnings. Rate and fare schedules must be published and posted in certain places visible to the public. Contracts between railroad companies and between companies and private firms must be filed before the Interstate Commerce Commission, and be formally approved by it.

To enforce these provisions, the Interstate Commerce Commission was created, whose eleven members are appointed for terms of six years, subject to the approval of the Senate. No more than three members of the Commission may be partisans of the same political party.

The Commission is empowered to inquire into the business of all carriers; railroad, steamship and express companies. It may compel testimony and requisition papers and documents, and it has the right to investigate on all complaints that are made before it. It must publish full reports on all such investigations. The power most widely associated with the Commission, however, is that of fixing transportation rates, for both freight and passenger traffic. Its decisions regarding rates are final, and remain valid for two years. The Commission may also award damages where private persons or firms can prove injury received through any of the carrier companies coming under its jurisdiction. It may examine the books and accounts of such companies. It may require from them annual, or even monthly, reports of their finances and business transactions. Summed up, the Commission is, in fact, a court of adjustment in transportation matters, with all the powers of a court. Its headquarters are in Washington, D. C., but its sittings may be in any part of the country.

Transportation Act, 1920.—The Transportation Act, 1920, provides for the termination of Federal control and limits the powers the President may thereafter exercise under the Federal-control act to those necessary to wind up and settle matters arising out of Federal control; for the turning over to the Secretary of War for operation and settling up of all matters arising out of Federal control in connection with boats, barges, tugs, and other facilities on the inland, canal, and coastwise waterways acquired by the United States under the Federal-control act, and requiring him to provide terminal facilities for the interchange of traffic with carriers, and renders the operation of the boats and facilities subject to the provision of the interstate-commerce act to the same extent they would be if not owned by the United States. This act also authorizes the President to advance moneys to the carriers for certain purposes out of the revolving fund created by the Federal-control act, and requires the commission to ascertain and certify to the Secretary of the Treasury the amounts to be thus advanced to the carriers. It also provides for the appointment by the President of an agent to act as defendant in actions at law, suits in equity, proceedings in admiralty, and before the commission, based on matters arising out of Federal control, and confers upon the commission jurisdiction over all claims for reparation pertaining to the Federal-control period, whether arising in respect of intrastate or interstate traffic; that, pending actions, suits, proceedings, and reparation claims shall not abate, but that reparation awards in such cases shall be paid out of the revolving fund; that the period of Federal control shall not be computed as a part of the periods of limitation in actions against carriers or in claims for reparation based on causes of action arising out of matters pertaining to Federal control; and that a judgment in favor of the United States is the only one that may be levied against the property of the carrier where the judgment is based upon such matters.

The Transportation Act also continues in force until changed by lawful authority all rates, fares, charges, classifications, regulations, and practices in effect on Feb. 29, 1920, and prohibits reductions of such rates, fares, and charges prior to Sept. 1, 1920, except with the approval of the commission. It provides certain guaranties of compensation for a period of six months from March 1, 1920, to all carriers which were entitled to the same

under the Federal-control act, and which on or before March 15, 1920, filed with the commission a written statement that they accepted the provisions and conditions upon which such guaranties are made. A similar guaranty under the same conditions of acceptance is made to the American Railway Express Co. that the contract between it and the Director General of Railroads shall remain in effect during the guaranty period in so far as the said contract constitutes a guaranty to the express company against a deficit in operating income. It provides for advances to the express company and the carriers to meet operating expenses, and fixed charges, and that the commission after the expiration of the guaranty period shall ascertain and certify to the Secretary of the Treasury the amount due any carrier under the guaranty, and the amount of and the times at which such loans or advances shall be made to any carrier. The Transportation Act also provides for the inspection of carriers' records by the President or his agents until the affairs of Federal control are concluded, and for the refunding of carriers' indebtedness to the United States. It also authorizes the Secretary of the Treasury to make new loans to carriers upon certain conditions and upon favorable certification by the commission and creates a revolving fund of $300,000,000 out of which said loans are to be made and out of which certain judgments, decrees, and awards are to be paid.

The Transportation Act also provides a plan for the settlement of controversies between carriers and their employees and subordinate officials through the medium of railroad boards of labor adjustment and a Railroad Labor Board. The latter consists of nine members, three of whom, representing the labor group, are to be chosen from not less than six nominees designated by the employees; three, representing the management, are to be chosen from not less than six nominees designated by the carriers. All nominations in both groups are made under rules and regulations prescribed by the commission. Three members, representing the public, are chosen directly by the President. All appointments are made by and with the advice and consent of the Senate.

INTERTRIGO (-trī'gō), a slight inflammation of the skin occurring in the hollows of folds of the integuments or joints, where two surfaces lie in contact with each other, also called chafing, fretting, galls.

INTERVAL, in music, the distance between any two sounds. Intervals when confined within the octave are simple, when they exceed it they are compound. The interval of a whole tone, as from C to D, is called a second, of a whole tone and a semitone, as from C to E flat, a minor third, etc.

INTESTACY, the state of a person who has died without testing, *i. e.*, without leaving a will. If no will, or deed equivalent to a will, is executed, or if a will executed is invalid from defect of form, then an intestacy occurs, and the law provides an heir or next of kin because of the failure of the owner himself to do so.

INTESTINES, the entrails; the portion of the digestive apparatus inferior in position to the stomach. The intestines consist of three coats, an outer one (the peritoneum), an inner or mucous membrane, and an intermediate muscular coat. There are two intestines, the large and the small one. The large intestine extends from the termination of the ileum to the anus. It is about 5 or 6 feet long, or about one-fifth that of the intestinal canal. Its diameter is from 2½ inches to 1½ inches. It is divided into the cæcum, with its vermiform appendix, the colon, and the rectum. The small intestine commences at the pylorus, winds into many convolutions, and terminates in the large intestine. In the adult it is about 20 feet in length. It is arbitrarily divided into three parts—viz., the duodenum, the jejunum, and the ileum. It constitutes four-fifths of the whole intestines, the larger making up the other fifth. They are used to aid in assimilating the food after digestion, and convey forward the excrementitious matter.

INTOXICATION, the state produced by the excessive use of alcoholic liquids. In the first stage the circulation of the blood becomes somewhat more rapid, and all the functions of the body and mind are exercised with more freedom. In the next degree consciousness is still more weakened; the ideas lose their connection; vertigo, double vision, and other discomforts supervene; till finally the excitement partakes of the nature of delirium, and is followed by a more or less prolonged stupor, often by dangerous coma.

INTRANSIGENTES (-trän'sē-hentāz) (Spanish, "the irreconcilables"), the name given to the Extreme Left in the Spanish Cortes, and afterward to the Extreme Republican party in Spain, corresponding with the Communists in France. In the latter sense it was first

used in the Spanish troubles which arose when Amadeus resigned the throne in 1873.

INTRENCHMENT, any work that fortifies a post against the attack of an enemy. The word is generally used to denote a ditch or trench, usually a part of a system of trenches.

INTREPID, THE, the name given to the Tripolitan ketch captured by Decatur, in which he and 74 brave American tars, on the night of Feb. 16, 1804, entered the harbor of Tripoli, and boarded the American warship "Philadelphia," which the Tripolitan pirates had captured, and after a fierce struggle with her turbaned defenders killed or drove them into the sea.

INTRODUCTION, in music, a kind of preface or prelude to a following movement. Formerly the introduction was only to be found in large musical works, such as symphonies, overtures, oratorios, etc.; but now it is found in every rondo, fantasia, polonaise, waltz, etc., on the principle that it is considered abrupt to begin all at once, without preparing the audience for what is to come. In earlier operas introduction is applied to the piece of music with which they begin, and which immediately follows the overture. In some cases the overture and introduction are united, the composition going on without any formal pause. The introductions are also important and characteristic parts of several of the symphonies of Beethoven and Schumann.

In Biblical science, a department, the objects of which are stated by Prof. K. A. Credner, D. D., to be five-fold: (1) The origin of the individual books received into the sacred canon; (2) the history of the canon and the origin of the collection of Scripture books; (3) the history of the several translations, etc.; (4) the history of the text, and (5) the history of interpretation. It is divided into introduction to the Old and introduction to the New Testament.

INTRUSIVE ROCKS, in geology, rocks of igneous origin which have forced their way through crevices or rents in sedimentary strata, or have broken them up.

INTUITION, in ordinary language, the act of looking on; a sight, a view; a regard, an aim. In philosophy, a term borrowed from scholastic theology, where it signifies a knowledge of God supernaturally obtained, and by consequence, superior to knowledge obtained by ordinary methods. In the French and Scotch schools all beliefs and judgments presenting themselves spontaneously to the mind, with irresistible evidence, but without the assistance of reasoning or reflection, are called intuitions, axioms, first principles, principles of common sense, or self-evident truths, and the recognition of these intuitions is the fundamental doctrine of intuitionalism. In the school of Kant the word intuition is nearly synonymous with perception.

INUNDATION. See FLOODS.

INVALIDES (*ang*-väl-ēd'), the name of a French soldiers' home. In 1670, during the administration of Louvois, Louis XIV., by whose wars the number of invalids was greatly augmented, determined to found a magnificent establishment to receive them. The foundations were laid in 1670, and the main building was finished about 1706. Several additions were made at various times to the buildings of the hotel; and the whole edifice now covers 16 acres of ground, enclosing 15 courts. The church or dome was built by Mansard, and finished in 1706. All soldiers who are actually disabled by their wounds, or who have served 30 years, and obtained a pension, are entitled to the privileges of this institution. The hotel can accommodate 6,000 men, who all wear the same costume.

INVENTORY, a list or catalogue of goods and chattels, containing a full, true, and particular description of each, with its value, made on various occasions, as on the sale of goods, decease of a person, storage of goods for safety, etc.; hence, generally a list, an account, a catalogue.

INVERNESS, a sea-port town of Scotland; on both sides of the Ness river, at its entrance into the Moray Firth, 115 miles from Edinburgh. It is a fine town, with a commodious harbor, and was long considered as the metropolis of the Highlands. Tartan cloth for the Highland markets is here manufactured in considerable quantities. Pop., about 20,000. Also a town in Australia. Pop., about 3,000.

INVERNESS-SHIRE, a county of Scotland, with an area of 4211 square miles, the largest county in the kingdom. The greater part of it is heathland and deer forests. Within its borders are included several large islands. On the coast are important fisheries. Pop., about 90,000.

INVERSION, the chemical change which takes place when starch, dextrin, or sugar is boiled with a dilute acid. Inversion may also take place in the

presence of ferments, or by prolonged boiling with water.

In geology, the overturning or folding over of strata by igneous agency, so that the order of their succession seems reversed.

In mathematics, the operation of changing the order of the terms, so that the antecedent shall take the place of the consequent and the reverse, in both couplets. Thus, from the proportion $a : b :: c : d$, we have, by inversion, $b : a :: d : c$.

In music, the transposition of certain phrases, having a common root. (1) The inversion of a chord is effected by making one of the inner notes act as a bass note, and by this means as many inversions can be made as there are actual notes in the chord, not counting the root. In such inversions the harmony remains the same, though the order of component parts is changed. (2) Intervals are inverted by making that which was the upper note the lower, and the reverse. The inversion of an interval within the octave may readily be found in the difference between the figure 9 and the interval known; then an interval of a second becomes a seventh by inversion, etc. (3) The inversion of a subject is produced by inverting the intervals of which it consists.

INVERTEBRATA, a subdivision of the animal kingdom, containing the animals which have no jointed, bony, or cartilaginous spinal column, with a braincase or limbs connected with an internal skeleton. They are divided into the following great groups or types: Mollusca, arthropoda, vermes, echinodermata, zoöphyta, and protozoa, with two intermediate or connecting groups, the tunicata and the molluscoida.

INVESTITURE. If any bishop or other clergyman have the cure of souls and also a stipend, two elements, the one sacred and the other civil, exist in his position; and as nearly every spiritual act carries civil consequences, and nearly every civil act connected with his benefice has sacred effects, scarcely any prudence can avoid periodical collision between the ecclesiastical and the civil power. From the papal point of view, and indeed from that of all Church functionaries, a great ecclesiastical end will be achieved if the State can be made an obedient handmaid of the Church. From the establishment of the Church under Constantine the Great, in the 4th century, the Roman functionaries increasingly interfered in ecclesiastical affairs, and by the 11th lay patronage had been much abused, and simony largely prevailed. The emperors, kings, and princes of Europe had been accustomed to confer the temporalities of the larger benefices and monasteries by the delivery of a ring and a staff, or crozier. When the bishop or abbot elect had received these, he carried them to the metropolitan, who returned them, to indicate that the Church had conferred on him sacred office. Pope Gregory VII. (Hildebrand) considered that a ring and a crozier were insignia of spiritual office, and not of its temporal accompaniments, the crozier symbolizing the pastoral charge and the ring the celestial mysteries. He therefore wished the then reigning emperor, Henry IV., to desist from conferring investitures in such a form, and threatened excommunication on any one conferring investitures or receiving them. The pontiff's legates and the emperor came to an arrangement at the Diet of Worms, 1122, one article of the treaty being that the emperor should confer the temporalities of a see or abbacy by some other symbols than the sacred ones of the ring and the crozier.

INVOCATION, a judicial call, demand, or order; as, the invocation of papers into court.

INVOCATION OF SAINTS. The authoritative statement of Roman doctrine on this subject is found in a decree of the Council of Trent (sess. 25, held Dec. 3 and 4, 1563), which ordains that "all bishops and others having the duty of teaching" should instruct the faithful:

> "That the saints reigning with Christ offer their prayers to God for men; that it is good and useful to invoke them, and to have recourse to their prayers, succor, and assistance to obtain benefits from God through His Son Jesus Christ, our Lord, who alone is our Redeemer and Saviour."

Here two propositions are laid down in the plainest possible manner: (1) That the saints do intercede for men; (2) the utility of asking such intercession. Theologians allege Scripture and tradition in support of the doctrine and practice (see Jer. xv: i; Luke xv: 7; Rev. v: 8, vi: 9–11, viii: 3). Inscriptions in the Catacombs show that the practice was common in the Early Church, and mention of it is made by St. Gregory Nazianzen, St. Basil, St. Gregory Nyssen, St. Ambrose and St. Augustine. The devotion of the Church is chiefly toward the saints who died after Christ. To the Maccabees alone is a feast celebrated in the whole Latin Church.

Anglican Theology.—There were very many reasons why, when the "Articles of Religion" were "ratified and confirmed," the separation between the Reformed and Roman Churches should be made as marked as possible, and the 22d

of the Thirty-nine Articles strongly condemns the invocation of saints. The practice, as a private devotion, was known in Caroline days, and lingers, in a debased form, in country districts, in the rhyme:

"Matthew, Mark, Luke, and John,
Guard the bed that I lie on," etc.

With the Oxford Movement the doctrine of the Invocation of Saints came to the front.

INVOICE, a statement on paper concerning goods sent to a customer for sale or on approval. Details respecting which it is important for the consignee to be informed are added, and in these respects it differs from a trade bill or definite account.

INVOLUCRE, or **INVOLUCRUM**, in botany, verticillate bracts surrounding the flowers of *Umbelliferæ* and *Compositæ*. Those surrounding the general umbel in the former order are called the universal involucre, and those around the umbrellules the partial involucre. An involucre may be caliculated, scaly, imbricated, superimposed, etc.

INVOLUTION, in mathematics, the operation of finding any power of a given quantity, the multiplication of a number into itself any given number of times; thus the third power of 2 is found by involution, or multiplication of the number by itself, and the product by the same number; thus $2 \times 2 \times 2 = 8$. It is the reverse of EVOLUTION (*q. v.*). The operation of involution may be directly performed by continued multiplication, but it is often performed by means of formulas, particularly by the binomial formula.

In grammar, the insertion of one or more clauses or members of a sentence between the agent or subject and the verb.

In pathology, the restoration to its normal size of any part which has been abnormally developed. The opposite of evolution.

IO (ī'ō), in Greek mythology, according to one of the most popular versions, a daughter of Inachus, King of Argos. The love of Zeus for this maiden roused, as in other myths, the jealousy of Hera, who transformed Io into a heifer, and placed her in charge of Argus Panoptes. This guardian was slain by Hermes, who was thence called Argeiphontes, or the Slayer of Argus. Hera then sent a gadfly, which stung the heifer, and drove her in madness over the earth. Thus began those wanderings of Io which Æschylus has sketched in his drama of "Prometheus Chained."

IO, in astronomy, (1) the first satellite of Jupiter, discovered by Galileo in 1610. The names of the four satellites of this planet are seldom used, especially as three of them have been assigned to asteroids as well, and they are generally known by the numbers I, II, III, and IV. (2) The name of the 85th asteroid, discovered by Peters at Clinton, N. Y., Sept. 19, 1865, the fourth of the small planets detected by him.

IODIC ACID, HIO_3, white, crystalline solid, formed when iodine is boiled with strong nitric acid, or when sulphuric acid is added to a solution of barium iodate. Specific gravity 4·629, m.p. 110° C. Soluble in water, and easily decomposed by reducing agents, forming hydriodic acid and free iodine. Used in medicine as a caustic for external application.

IODINE, in chemistry, a haloid monatomic element; symbol I; at. w. 127. Obtained from the ash of sea-weeds called kelp.

In pharmacy, iodine is used externally in chronic skin diseases and over enlarged and indurated parts and diseased joints to alter action or cause absorption, or to kill parasites. It may be applied in the form of a liniment, a solution, a tincture or an ointment. The *vapor iodi* (vapor of iodine) may be used as an inhalation in some forms of chronic bronchitis and phthisis. A solution of iodine is useful for rendering very transparent objects more distinct.

IODISM, the term within which is included a variety of painful and inconvenient results following, under rare circumstances, the administration of iodine and its salts, but more especially the iodide of potash; mental depression; irritation of mucous membranes, as sneezing, watering at the eyes, etc.; a papular and postular eruption of the skin; nausea, loss of appetite, and a bitter taste in the mouth.

IODOFORM, in chemistry, CHI_3, a lemon-yellow crystalline substance, having a saffron-like odor and an unpleasant iodine-like taste. Its odor is most persistent, and can hardly be removed. It is of interest as having a composition similar to that of CHLOROFORM (*q. v.*), from which it only differs in having iodine in the place of chlorine. It may be prepared by the action of iodine on alcohol in the presence of carbonate of potash. It is employed externally as an application to painful ulcers, and it often gives relief in uterine cancer. In the form of iodoform gauze it is used in antiseptic surgery.

IOLA, a city of Kansas the county seat of Allen co., on the Neosho river, and on the Missouri, Kansas, and Texas, the Missouri Pacific, and the Atchison, Topeka, and Santa Fe railroads. The city has had rapid growth on account of the important natural gas wells in the vicinity. It has also large zinc smelter, cement works, foundry machine shops, and has a large wholesale trade with the surrounding region. There is a Carnegie library, hospital, and other public buildings. Pop. (1910) 9,032; (1920) 8,513.

IOLAUS (ī-ō-lā'us), in Greek mythology, a companion of Hercules. He was worshiped chiefly in Sardinia.

IONA (ī-ō'nä), or **ICOLMKILL** (ī-kōm-kil'), the isle of Columba's cell or retreat, one of the W. islands of Scotland, in the Atlantic Ocean, separated from the W. point of Mull by a narrow channel called the Sound of Iona, 7 miles from Staffa; 3 miles long; 1½ miles broad; area 2,000 acres. It is chiefly interesting to the antiquarian, for the ruins of its ancient religious edifices. These were established about the year 565, by St. Columba, who left Ireland, his native country, with the intention of preaching Christianity to the Picts. In the church, said to have been built by Queen Margaret toward the latter end of the 11th century, are the tombs of 48 Scottish kings, 4 kings of Ireland, 8 Norwegian monarchs, and 1 king of France. The rearing of black cattle forms the principal occupation of the inhabitants.

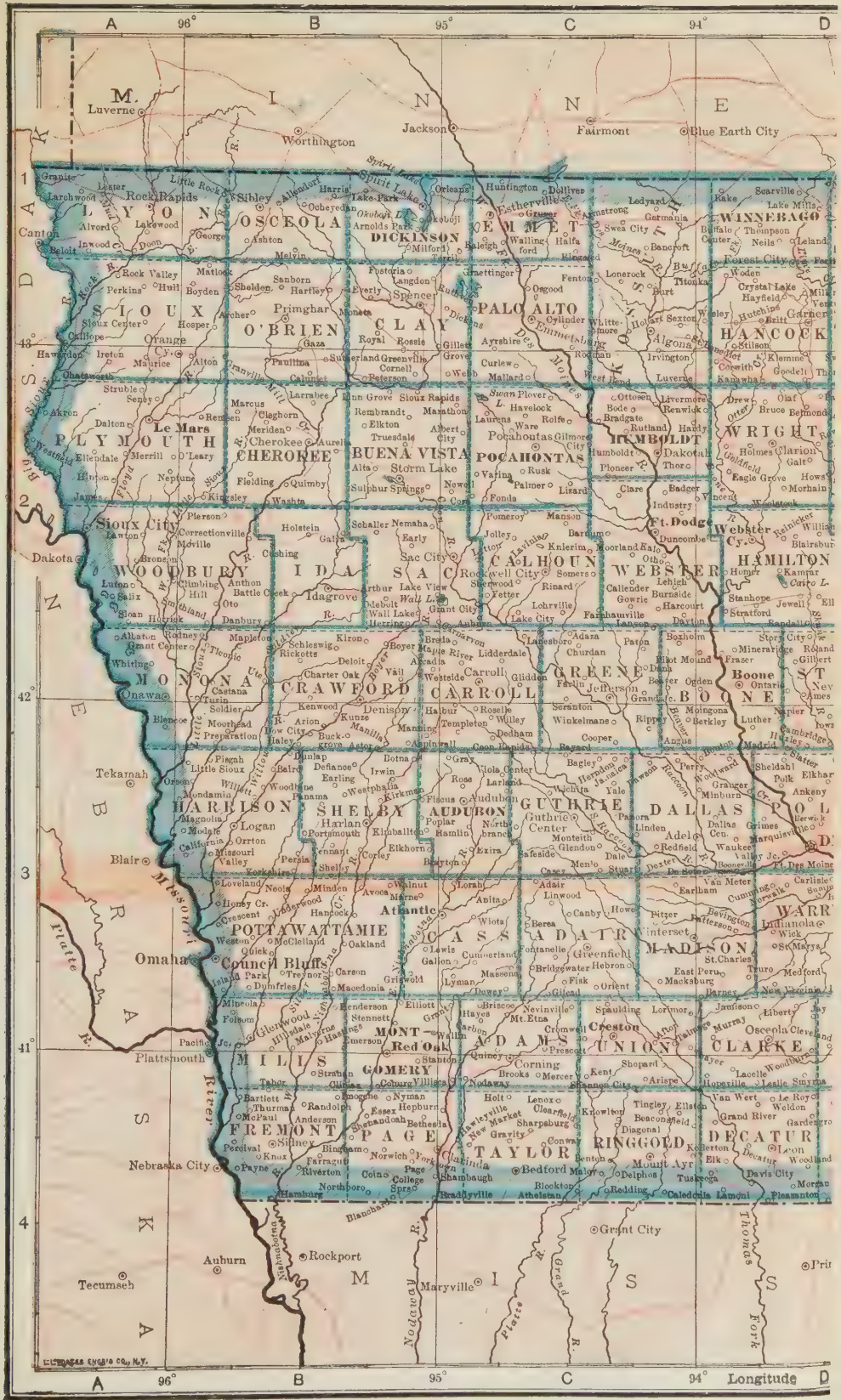
IONIA, in ancient geography, the most flourishing district of Asia Minor, where a colony from Attica settled about 1050 B. C. This beautiful country extended from the Hermus along the shore of the Ægean Sea to Miletus and the promontory of Posideum. It was bounded on the N. by Æolia, S. by Caria, E. by Lydia and part of Caria, and on the W. by the Icarian and Ægean seas, and lay between lat. 37° and 40° N.; its longitude has never been accurately defined. This country is said to have been peopled by Greek colonists about 1045 B. C. After founding Colophon, Ephesus, Miletus, and other important cities, the Ionians obtained possession of Smyrna about 688 B. C., and the country soon attained a high degree of prosperity. At the commencement of the reign of Crœsus, 560 B. C., it was subject to the Lydians, and it was conquered by Cyrus 557 B. C. On the overthrow of the Persian empire by Alexander III., Ionia became subject to Macedonia, and it afterward formed part of the Roman empire 64 B. C.

IONIA, a city and county-seat of Ionia co., Mich.; on the Grand river, and the Pere Marquette and the Grand Trunk railroads; 35 miles E. of Grand Rapids. It contains the State House of Correction, the State Asylum for the Dangerous and Criminal Insane, large railroad repair shops, and manufactories of pottery, furniture, machinery, edged tools, and clothing. The industrial interests are greatly promoted by excellent power furnished by the river. The city has a public high school, library, several daily and weekly periodicals. Pop. (1910) 5,030; (1920) 6,935.

IONIAN ISLANDS, the name commonly given to the seven islands, Cephalonia, Cerigo, Corfu, Ithaca, Paxo, Santa Maura, and Zante, with a number of islets, extending along the S. W. coast of Greece; area 1,097 square miles; pop., about 230,000. Pop. of Corfu (1917) 140,757. Products, corn, grapes, olives, currants, cotton, honey, wax, etc. Manufactures salt, olive oil, wine, brandy. The Ionian Islands, with their dependencies, were erected into the republic of the Seven United Islands, March 21, 1800. It was to pay a moderate tribute to the Porte, and its independence was guaranteed by Turkey and Russia. The French captured the islands in 1807, and Russia ceded them to France by a secret article of the treaty of Tilsit, July 7, 1807. The French garrisons surrendered to an English force, Oct. 3, 1809, and by a treaty between Great Britain and Russia, signed at Paris Nov. 5, 1815, they were formed into an independent State, called the United States of the Ionian Islands, or the Septinsular Republic, under the protection of England. With the consent of Great Britain, they were reunited to the kingdom of Greece in 1864.

IONIAN SEA, that part of the Mediterranean communicating with the Gulf of Venice by the Strait of Otranto, and having Greece and part of European Turkey on the E.; Sicily and the most S. part of Italy on the W. Its greatest breadth is between Cape Matapan in the Morea, and Cape Passaro in Sicily, which is about 400 miles.

IONIAN SCHOOL, the first school of Greek philosophy, the distinctive characteristic of which was its inquiry into the constitution of the universe. Thales of Miletus opened the inquiry. He is usually spoken of as the founder of the Ionian school; he was more—he was the father of Greek speculation. He pre-


A
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1
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M. I N N E
Luverne
Worthington
Jackson
Fairmont
Blue Earth City
Granite
Lester
Larchwood
Rock Rapids
LYON
Sibley
OSCEOLA
Ocheyedan
Allendorf
Harris
Lake Park
Spirit Lake
Okoboji
Orleans
Huntington
Dolliver
Estherville
EMMET
Armstrong
Ledyard
Rake
Scarville
Lake Mills
WINNEBAGO
Buffalo Center
Thompson
Neils
Leland
Forest City
Canton
Alvord
Lakewood
George
Ashton
Melvin
DICKINSON
Milford
Arnolds Park
Okoboji
Wallingford
Halfa
Ringsted
Swea City
Bancroft
Titonka
Rock Valley
Matlock
Sanborn
Hartley
Fostoria
Langdon
Gruettinger
Lonerock
Burt
Crystal Lake
Hayfield
Perkins
Hull
Boyden
Sheldon
Everly
Spencer
Ruthven
Ocheyedan
Fenton
Ogood
Wesley
Hutchins
Garner
Britt
SIOUX
Sioux Center
Hosper
Archer
Primghar
O'BRIEN
Gaza
Royal
Bossie
Gillett Grove
Dickens
PALO ALTO
Cylinder
Emmetsburg
Whittemore
Holtan
Sexton
Algona
Lu Verne
HANCOCK
Stilson
Chatsworth
Struble
Sioux R.
Granville
Paullina
Sutherland
Greenville
Cornell
Peterson
Webb
Curlew
Mallard
Irvington
Luverne
Kanawha
Goodell
Hawarden
Ireton
Maurice
Orange City
Alton
Calumet
Rock
Rodman
West Bend
Corwith
Klemme
Sergey
Akron
Remsen
Cleghorn
Meriden
Cherokee
Aurelia
Larrabee
Linn Grove
Sioux Rapids
Rembrandt
Marathon
Elkton
Truesdale
Albert City
Swan
Plover
L. Havelock
Ware
Laurens
Rolfe
Potahontas
Gilmore City
Ottosen
Livermore
Renwick
Bode
Bradgate
Rutland
Hardy
Humboldt
Dakotah
Pioneer
Thor
Drew
Olaf
Otter
Bruce
Belmond
Dalton
Le Mars
PLYMOUTH
Merrill
Leary
Ellendale
Neptune
Westfield
Big Sioux
Floyd
Struble
Hinton
James
Kingsley
Fielding
Quimby
Washta
CHEROKEE
BUENA VISTA
Alta
Storm Lake
Sulphur Springs
Newell
Corwith
Varina
Rusk
Palmer
Lizard
POCAHONTAS
Fonda
Clare
Badger
Vincent
Industry
Wolfstock
Goldfield
Eagle Grove
Holmes
Clarion
Galt
Howe
Morhain
WRIGHT
Sioux City
Lawton
Correctionville
Moville
Bronson
Dakota
Salix
Smithland
Holstein
Galva
Schaller
Nemaha
Early
Sac City
Pomeroy
Manson
Jolley
Lanyon
Knierim
Barnum
Moorland
Kalo
Otho
Duncombe
Ft. Dodge
Webster Cy.
Rainbow
Williams
Blairsburg
HAMILTON
Homer
Kamrar
Cairo
Stanhope
Jewell
Stratford
Randall
WOODBURY
Luton
Climbing Hill
Anthon
Battle Creek
Oto
Sloan
Hornick
Danbury
Cushing
IDA
Ida Grove
Arthur
Lake View
Wall Lake
Debolt
Galt
Sac City
Rockwell City
Sherwood
Fetter
Rinard
Somers
CALHOUN
Lohrville
Lake City
Farnhamville
Lanyon
Lehigh
Gowrie
Callender
Burnside
Harcourt
Dayton
WEBSTER
Stratford
Randall
Story City
Roland
Gillett
Mineralridge
Fraser
Boone
Ontario
Ames
Onawa
Whitebird
Allaton
Rodney
Grant Center
Mapleton
Soldier
Turin
Castana
Moorhead
Preparation
Blencoe
Tekamah
Orson
Mondamin
Willow
Pisgah
Little Sioux
Baird
Woodbine
Earling
Defiance
Irwin
Westphalia
Kirkman
Panama
Botna
Gray
Rose
Larland
Viola Center
Yale
Jamaica
Bagley
Herndon
Perry
Woodward
Sheldahl
Polk
Elkhart
Ankeny
Grimes
Minburn
Granger
Dallas Cen.
Linden
Adel
Redfield
Waukee
Valley Jc.
Ft. Des Moines
Berwick
Marquisville
Dallas
Polk
MONONA
Onawa
Castana
Turin
Soldier
Whitebird
Blencoe
Moorhead
Preparation
Charter Oak
Kenwood
Arion
Denison
Deloit
Vail
Westside
Carroll
Glidden
Farlin
Jefferson
Grandview
Scranton
Winkelmane
Ripley
Moingona
Berkley
Luther
Napier
Boone
Madrid
Cambridge
Hamilton
Slater
Elkhart
Ankeny
CRAWFORD
Manilla
Buck Grove
Aspinwall
Coon Rapids
Regard
Angus
Boonsboro
Woodward
Perry
Sheldahl
Polk
Elkhart
Ankeny
CARROLL
Halbur
Templeton
Roselle
Willey
Dedham
Cooper
Graver
Granger
Minburn
Dallas Cen.
Linden
Adel
Redfield
Waukee
Valley Jc.
Ft. Des Moines
Berwick
Marquisville
Dallas
Polk
Missouri
Boyer
Maple River
Lidderdale
Adaza
Churdan
Paton
Bagley
Herndon
Jamaica
Yale
Perry
Woodward
Sheldahl
Polk
Elkhart
Ankeny
Grimes
Minburn
Granger

IOWA
SCALE OF STATUTE MILES
0 5 10 20 30 40
SCALE OF KILOMETERS
0 10 20 30 40 50 60
Places of 75,000 and over DES MOINES
" 25,000 to 75,000 Dubuque
" 5,000 to 25,000 Clinton
County Towns
Railroads
Electric Railroads
93° E 92° F 91° G
West 93° from E Greenwich 92° F 91° G
Preston
Caledonia
Leroy
Lancaster
Dubuque
Galena
Rock Island
Davenport
Muscatine
Burlington
Fort Madison
Keokuk
Carthage
Macomb
Galesburg
Oquawka
Monmouth
Aledo
Unionville
Memphis
Kahoka
Lancaster
Mississippi R.
Missouri R.
Des Moines R.
Iowa R.
Cedar R.
Wapsipinicon R.
Turkey R.
Maquoketa R.
Skunk R.
Wisconsin
Illinois
Missouri
Fox R.
Mt. Sterling
Croton
Farmington
Donnellson
Charleston
New Boston
Argyle
Montrose
Vincennes
Summitville
Franklin
Weaver
Primrose
LaCrew
Bonaparte
Denmark
West Point
Mt. Hamill
Cottonwood
Hillsboro
Middletown
Lowell
Danville
Salem
London
New
W. Burlington
Latty
Yarmouth
Mediapolis
Oakville
Wapello
Winfield
Olds
Morning Sun
Columbus Cy.
Nichols
Riverside
Richmond
Gladwin
Hopkins
Columbus Jct.
Fredonia
Grandview
Letts
Conesville
Fruitland
Montpelier
Buffalo
Bluegrass
Stockton
Walcott
Pleasant Valley
Le Claire
Princeton
Eldridge
Long Grove
Dunshee
Low Moor
Camanche
Clinton
DeWitt
Calamus
Grand Mound
Lyons
Fulton
Albany
Green Island
Sabula
Spragueville
Hurstville
Andrew
Springbrook
Canton
Ironton
Bellevue
Ottercreek
Lamotte
Smiths
Perry
Spechts Ferry
Durango
Peosta
Epworth
Farley
Earlville
Delaware
Manchester
Delhi
Worthington
Cascade
Bernard
St. Donatus
Wilkins
Hopkinton
Ryan
Monticello
Wyoming
Oxford Jc.
Delmar
Bryant
Elwood
Petersville
Welton
Lost Nation
Charlotte
Almont
Toronto
Clarence
Lowden
Mechanicsville
Wald
Stanwood
Mills
Tipton
Duchanan
Bennett
Big Rock
Liberty
Sunbury
Dunshee
Eldridge
Princeton
Scott
Pleasant Valley
Le Claire
Davenport
Rock Island
Muscatine
Fairport
Aledo
Galesburg
Oquawka
Monmouth
Burlington
Jones
Center
Onslow
Monmouth
Wayne
Jackson
Linn
Marion
Stone City
Cedar Rapids
Iowa
Johnson
Iowa City
Cedar
Tipton
Scott
Clinton
Muscatine
Louisa
Washington
Keokuk
Henry
Des Moines
Lee
Van Buren
Davis
Appanoose
Jefferson
Fairfield
Wapello
Ottumwa
Monroe
Lucas
Marion
Mahaska
Oskaloosa
Keokuk
Poweshiek
Iowa
Grinnell
Jasper
Newton
Marshalltown
Tama
Toledo
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Des Moines
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Van Buren
Davis
Appanoose
Jefferson
Fairfield
Wapello
Ottumwa

scribed no method, and those who followed him did not accept his answer to the question, What is the beginning of all things? But the special claim of Thales to notice lies in the fact that he was the first to ask the question, and the first to attempt to establish a physical beginning.

IONIC ORDER, one of the three orders of architecture, the distinguishing characteristic of which is the volute of the capital. Its main features are the same as in the Doric style; their forms, however, are different. The Ionic order has more moldings, its forms are richer and more elegant, and, as a style, it is lighter and more graceful than the Doric. As regards the proportions of the Ionic order, no such remarkable difference as in the Doric is perceptible in the monuments which have been preserved to us. The height of the column is from 8½ to 9 times the lower diameter; the distance between the columns averages about twice the diameter, while the height of the entablature is not quite one-fourth that of the column. The most perfect specimens of the Ionic order are the temples of Minerva Pallas and of Erectheus in the Acropolis at Athens, and of Fortuna Virilis and the Coliseum at Rome.

IONS, the components into which an electrolyte is broken up on electrolysis. The one, the anion (the electro-negative component—*e. g.*, chlorine), travels "against" the current (in its conventional direction in the circuit), and is deposited on or chemically attacks the anode or positive electrode; the other, the cation (the electro-positive component—*e. g.*, copper), travels "with" the current to the cathode—*e. g.*, to the spoons in the plating bath. See ELECTRICITY.

IOS (ī'os), an island in the Ægean Sea, one of the traditional birth-places of Homer. His mother was born here, according to the ancients, and the poet's grave was likewise assigned to the island.

IOWA, a State in the North Central Division of the North American Union; bounded by Wisconsin, Illinois, Missouri, Nebraska, South Dakota, and Minnesota; admitted to the Union, Dec. 28, 1846; number of counties, 99; capital, Des Moines; area, 56,025 square miles; pop. (1890) 1,911,896; (1900) 2,231,853; (1910) 2,224,771; (1920) 2,404,021.

Topography.—The surface of the State is generally level, with a gentle rise toward the N. The highest elevation is near Spirit Lake, in Dickinson co., 1,694 feet. The center of the State forms a watershed between the Mississippi and the Missouri. There are no hills of consequence, the entire surface being a plateau, and whenever irregularities occur, they are depressions below the general level. There are steep bluffs along the river banks, caused by the wearing away of the drift and rocks by the water. The State is covered with prairie land, with no swamps or natural forests. The water system is divided into two parts, those rivers flowing into the Mississippi in the E., and those flowing into the Missouri in the W. Among the former are the Upper Iowa, Turkey, Maquoketa, Wapsipinicon, Cedar, Iowa, Skunk, Des Moines, and Boone, while the Missouri system includes the Chariton, Grand Platte, Nodaway, Nishnabotna, Boyer, Maple, Little Sioux, Rock, and Floyd rivers. The Big Sioux river forms most of the W. boundary. There are many small and beautiful lakes, the largest being Spirit Lake, and the Okoboji Lakes, in Dickinson co.

Geology.—The State presents 20 distinct geological formations. The N. part belongs to the drift deposits of Minnesota. Lower down the Lower Silurian is prominent, with Potsdam sandstone, lower magnesium limestone, and St. Peter's sandstone. The Upper Silurian is represented by the Niagara and Le Clair limestone, and the Devonian by the Hamilton and Chemung carboniferous limestones.

Mineralogy.—The Illinois coal field extends over an area of 20,000 square miles in this State, and lead is found in Galena limestone near Dubuque. The coal production of the State in 1918 was 8,240,000 tons, which was 725,000 tons less than the production of 1917. The other mineral products are mineral waters, cement, gypsum, sand and gravel. The value of the cement produced in 1916 was $6,870,863. The total value of the mineral production in that year was $39,336,372.

Soil.—The soil generally is a soft black loam, formed directly through deposits of the Quaternary age, and varies from 1 to 100 feet in depth. The soil is easily worked, free from stones and stumps, and of almost inexhaustible fertility. The soil of the prairies is a diluvial drift, while the river beds furnish a light alluvial deposit. The principal natural trees are several varieties of oak, hickory, elm, black walnut, linden, cottonwood, maple, cedar, slippery elm, butternut, sycamore, ash, pine, and box-elder.

Agriculture.—The fertility of the soil and the ease with which it may be worked present special advantages for agricultural pursuits. Among native fruits

are the plum, crabapple, grape, cherry, blackberry, gooseberry, strawberry, and raspberry, while the wild prairie grass is used for pasturage and for hay. The production and value of the principal crops in 1919 was as follows: corn, 416,000,000 bushels, valued at $499,200,000; oats, 196,182,000 bushels, valued at $125,556,000; wheat, 23,675,000 bushels, valued at $47,350,000; hay, 5,181,000 tons, valued at $90,149,000; potatoes, 4,945,000 bushels, valued at $9,494,000.

Manufactures.—There were in 1914 5,614 manufacturing establishments in the State, with 63,413 wage earners. The capital invested amounted to $233,127,000; and the wages paid to $39,816,000. The value of the materials used amounted to $205,451,000, and the value of the finished product to $310,750,000. The principal manufacturing places are Sioux City, noted for its flour mills; Cedar Rapids, Davenport, Dubuque, and Des Moines. The chief articles of manufacture include dairy products, agricultural implements, confectionery, clothing, flour and grist, lumber, saddlery and harness, packed meat, and tobacco.

Banking.—On Oct. 31, 1919, there were 354 National banks in operation, having $25,115,000 in capital, $20,413,200 in outstanding circulation, and $19,532,000 in United States bonds. There were also 371 State banks, with $16,634,000 capital, and $6,140,000 surplus; 23 trust and loan companies, with $4,046,000 capital and $908,000 surplus. In the year ending Sept. 30, 1919, the exchanges at the United States clearing house at Des Moines aggregated $528,019,000, an increase over the previous year of $38,325,000.

Education.—The school population of the State is about 680,000, with an average daily attendance of about 400,000. There were about 30,000 teachers with an average monthly salary for male teachers of about $90.00 and for female teachers of $80.00. Among the colleges are the State University of Iowa, at Iowa City, Cornell College, at Mount Vernon, Drake University, at Des Moines, Iowa College, at Grinnell, Luther College, at Decorah, and the Iowa Wesleyan University, at Mount Pleasant.

Churches.—The strongest denominations in the State are the Roman Catholic, Methodist Episcopal, Disciples of Christ, Regular Baptist, Presbyterian, North Lutheran, Congregational, United Brethren and Friends.

Railroads.—The total railway mileage for the State in 1919 was 9,935. This includes single track line only. There has been very little construction in recent years.

Finances.—The total receipts for the biennal period 1916–18 amounted to $20,806,476, and the disbursements to $19,398,657. There was a balance on hand at the end of the year of $2,125,644. There was no bonded debt, but a net debt of about $1,300,000.

State Government.—The governor is elected for a term of two years, and receives a salary of $5,000 per annum. Legislative sessions are held biennially and are unlimited in length. The Legislature has 50 members in the Senate, and 108 in the House. There are 11 representatives in Congress. The government in 1920 was Republican.

History.—Iowa was first visited by Marquette and Joliet, the French explorers, in 1673, and the first settlement was made by Julien Dubuque and a party of 10 to work the lead mines near the present city of Dubuque. The territory including Iowa was ceded to Spain in 1763, and receded to France in 1801, and became the property of the United States by the "Louisiana Purchase" in 1803. It became a separate territory in 1838, and was admitted to the Union as a State in 1846. In 1857 occurred the Spirit Lake massacre, an Indian raid, in which about 40 settlers were killed and their homes destroyed. The State capital was formerly at Iowa City, but in 1857 was removed to Des Moines.

Charities and Corrections.—The principal charitable and correctional institutions are as follows: five state hospitals, a Soldiers' Home, a training school for boys and girls, an institution for feeble minded children and a tuberculosis sanatorium.

IOWA CITY, a city and county-seat of Johnson co., Ia.; on the Iowa river, and Cedar Rapids and Iowa City, and the Chicago, Rock Island, and Pacific railroads; 54 miles W. of Davenport. It is the seat of the State University of Iowa, the Iowa City Academy, the State Historical Society and Library; has excellent hospitals, a Masonic Temple, and other public buildings; is the farming trade center for Johnson, Cedar, and Iowa counties; has excellent power provided by the Iowa river; and has manufactories of flour, perfumery, jewelry, etc. Besides its manufacturing interests the city has an extensive meat-packing industry. Pop. (1910) 10,091; (1920) 11,267.

IOWA RIVER, a river rising in Hancock, Iowa, near the Minnesota border, and flowing in a southeasterly direction into the Mississippi. It is about 300

miles long and is open to traffic to Iowa City, about 65 miles from its mouth.

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANICAL ARTS, a coeducational institute for higher education, at Ames, Iowa, founded in 1858. In 1919 it had about 3,500 students and a faculty of over 200. The endowment is about $700,000 and the annual income about $350,000. The library contains 45,000 volumes. President, Raymond A. Pearson.

IOWA, UNIVERSITY OF, a State University, at Iowa City, Iowa. It is coeducational. In 1919 the faculty numbered 438 and the students 3914. The library contains 153,700 volumes. President, Walter Albert Jessup, PH.D.

IOWA WESLEYAN UNIVERSITY, a coeducational institution in Mount Pleasant, Ia.; founded in 1842 under the auspices of the Methodist Episcopal Church; reported at the close of 1919. Professors and instructors, 21; students, 265; number of graduates, 1,072; president, W. S. Smith.

IPECACUANHA (ip‴-e-kak″-ū-ăn′ä), or **IPECACUAN** (-kak′ū-an) (the native Brazilian name), in botany, the plants producing the drug so named. In pharmacy: (1) The dried root of *Cephælis ipecacuanha*, a conchonaceous plant from Brazil. The ipecacuanha from that country is called annulated, to distinguish it from the striated kind from Peru. The active ingredients reside chiefly in the cortex. It contains a feeble alkaloid called ceretin. Its preparation are pills, powders, lozenges, and wine. In large doses it is an emetic; in smaller ones it is an expectorant and an alterative. It is considered a specific in dysentery. Ipecacuanha, made into ointment, is a counter-irritant. (2) Various other plants produce a similar drug, as, for example, all the *Alsodineæ*, a tribe of *Violaceæ*.

IPEK, a town in Montenegro, on the river Drin, about 400 miles northwest of Uskub. Until the Balkan Wars (1912–13) the town was on Turkish territory, and was part of the Vilayet of Kossovo, but after the readjustments of frontiers following the Treaty of Bucharest (1913) it was part of the territory included in the share of Montenegro. Having been famous as the site of an old Slavic monastery, it is now the seat of a bishopric. The population is now about 10,000.

IPHIANASSA (if-i-a-nas′sä), the daughter of Prætus, turned into a cow by Juno for pride.

IPHICLES (if′i-klēz), the twin brother of Hercules, and father of Iolaus.

IPHICRATES (if-ik′rä-tēz), a Greek soldier; born in Athens, 416 B. C. He won renown by his victories and his eloquence. He died in Thrace in 353 B. C.

IPHIGENIA (if″i-je-nī′ä), in Greek legend, a daughter of Agamemnon and Clytemnestra. When the Greeks, going to the Trojan War, were detained by contrary winds at Aulis, they were informed by Calchas, the soothsayer, that, to appease the gods, they must sacrifice Iphigenia to Diana, because her father had killed the favorite stag of that goddess. Rather than shed the blood of his daughter, Agamemnon, as chief of the Grecian forces, commanded one of his heralds to order the army to disperse. After much solicitation from the other chiefs, Agamemnon consented, however, to immolate his daughter for the common good of Greece; but as soon as Calchas had taken the knife and was about to strike the fatal blow Iphigenia suddenly disappeared, and a goat of uncommon size was found in her place. This supernatural change animated the Greeks, the wind suddenly became favorable, and the combined fleets set sail for Aulis. Iphigenia's innocence had excited the compassion of the goddess Diana, who carried her to Taurica, where she intrusted her with the care of her temple, whence she subsequently fled with her brother Orestes and his friend Pylades.

IPOMŒA (-mē′ä), a genus of *Convolvulaceæ*, tribe Convolvuleæ. The species, which are numerous, are found in the warmer parts of both hemispheres. About 100 are cultivated in gardens for their showy flowers, which are an ornament to trellis-work. *I. tuberosa*, the Spanish arbor vine of Jamaica, furnishes a kind of scammony; the root of *I. pandurata* is employed in this country as jalap; *I batatoides* is the male jalap of Mestitlan; *I. quamoclit* is sternutatory; *I. turpethum*, a native of the East Indies, and *I. operculata* is purgative. The foliage of *I. maritima* is made into a fomentation, and applied to joints enlarged by scrofula. The sweet potato was formerly called *I. batatas*, now it is *Batatas edulis*.

IPSWICH, a town in Massachusetts, in Essex co. It is on the Ipswich River, and on the Boston and Maine Railroad. It has a library, a Home for Aged Women, a House of Correction, and the Manning High School. The industries include planing and grist mills and manufactures of hosiery, boats and canoes. The town was settled as Aga-

wam in 1633 by John Winthrop. Pop. (1910) 5,777; (1920) 6,201.

IPSWICH, a parliamentary and municipal borough and river-port in England, capital of Suffolk, on the Orwell. It is pleasantly situated on a gentle declivity, and contains many interesting specimens of mediæval architecture. The public buildings include a fine town hall, a new postoffice, a custom house, county court house, cavalry barracks, theater, etc. The industries embrace agricultural implements, machinery, artificial stone, artificial manure, silk, tanning, ropes, lime and cement, brewing, ship-building, etc. Ipswich is a town of great antiquity. It was originally called Gippeswich, from the neighboring river Gipping. King John gave it its first charter. It sends two members to Parliament. Pop. (1917) 72,800.

Also, a town of Queensland, Australia, on the Bremer river, 23 miles W. of Brisbane. It is in a rich coal-mining district. Pop. (1917) 25,000.

IQUIQUE (ē-kē'kā), the port and capital of the Chilean territory of Tarapacá (Peruvian till 1884). It has amalgamating works in connection with neighboring silver mines, a foundry, and exports saltpeter, borax, and iodine. The climate is hot, and drinking water has to be obtained by distillation. Earthquakes have more than once damaged the town. Pop. (1917) 70,000.

IQUITOS (ē-kē'tōs), a town in the Peruvian department of Loreto, on the left bank of the Marañon, about 75 miles above the mouth of the Rio Napo. It has an active trade; the imports are exchanged mostly for india-rubber. Pop. of District (1917) 120,000.

IRAK AJEMI (ē-räk' äj'e-mē) (Persian Irak), a central province of Persia, nearly coincident with ancient Media; area, 138,190 square miles; pop. (estimated) over 1,000,000. A great portion of the surface consists of elevated table lands, but there are also numerous fertile valleys only partly cultivated. The E. parts are occupied by the extensive salt desert of Dasht-i-Kavir. The industries are cloth and carpets, and the making of glass and porcelain. The province contains the principal towns of the kingdom, including Teheran, the capital, and Ispahan.

IRAN. See PERSIA.

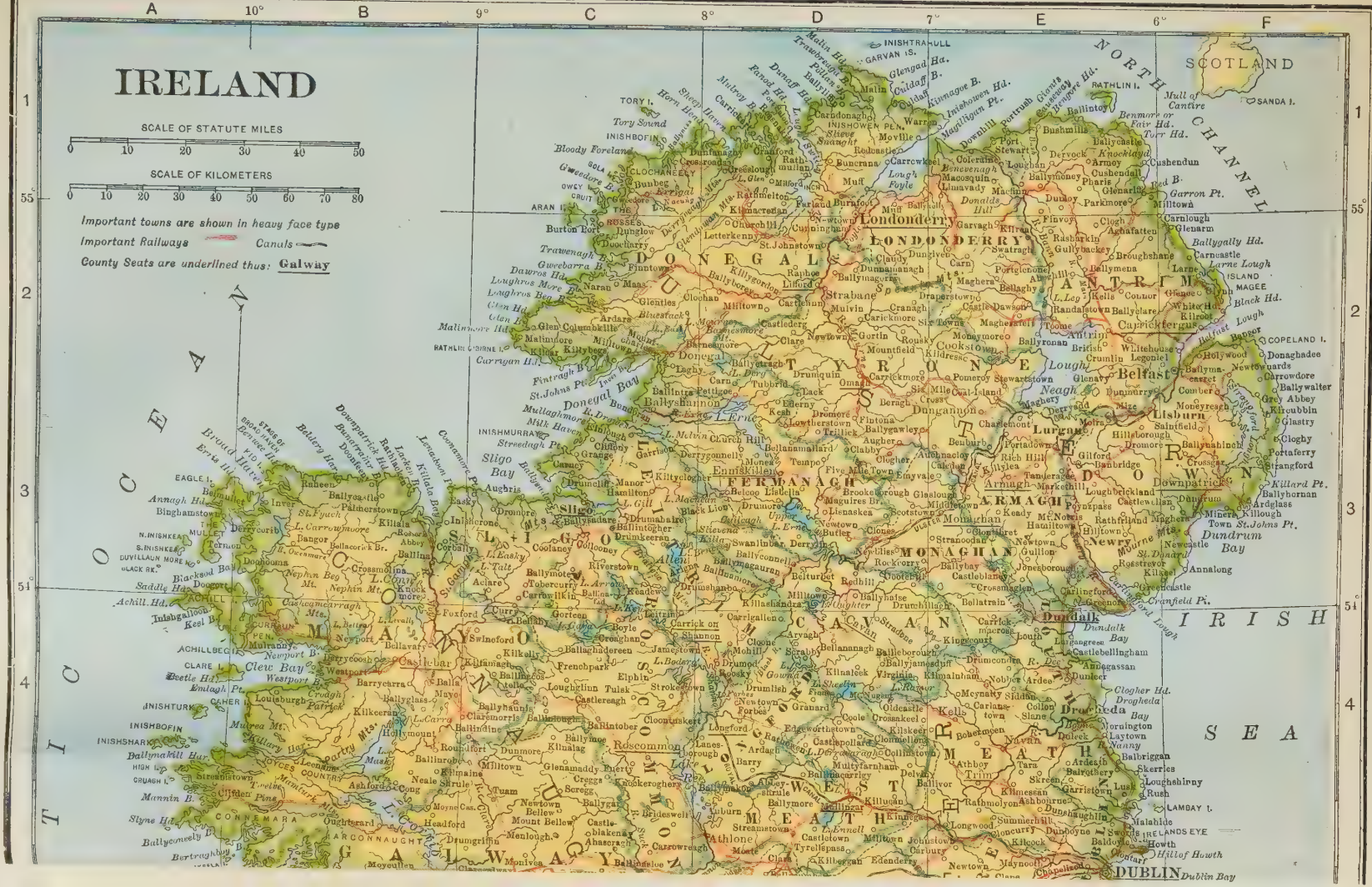
IRANIAN (ī-rā'ni-an) **LANGUAGES**, a family of languages belonging to the Indo-European stock, closely allied to the Indian group, and called by some philologists Persian, from the best-known member of the family. The two oldest known Iranian languages are the Old Persian of the cuneiform inscriptions and the Old Bactrian or Zend, the latter the language in which the Zend Avesta or sacred writings of the Parsees is composed. The Middle Iranian languages are the Pehlevi, and still later the Parsee, which are preserved in the commentaries to the Zend Avesta. The latter approaches pretty closely to the modern Persian. The most important of the New Iranian languages is the modern Persian, in which has been produced a very rich and celebrated literature. The Afghan or Pushtu, and the dialects of the Kurds, form separate branches of the Iranian family.

IRAWADI, or IRRAWADDY (ir-a-wäd'i), the principal stream in Farther India, E. of the Brahmaputra. It rises in lat. 28° N., lon. 97° 30′ E.; and, directing its course W. S. W., passes the cities of Amarapura and Old Ava. In lat. 21° 45′ it is joined from the N. W. by the Kyanquayn river; and in lat. 17° 50′ it divides into two branches, one of which, running to the S. W., passes the town of Persaim or Bassein; the other, running to the S. E., passes Rangoon. Among the banks of this river the greater part of the Burmese dominions is settled. Length, about 1,200 miles.

IRBIT (-bit'), a town of the Russian government of Perm, 1,170 miles nearly due E. of St. Petersburg. Its celebrated fair, held in February, is next to that of Nijni-Novgorod, the most important in the empire. Pop. about 20,000.

IRELAND (in Irish, *Erin;* in Latin, *Hibernia*), is separated from Great Britain on the E. by the Irish Sea, and surrounded on all sides by the North Atlantic Ocean. Measured diagonally, the greatest length, from Mizen Head in the S. W., to Fair Head in the N. E., is 300 miles; and the greatest breadth, from Carnsore Point in the S. E., to Benwee Head in the N. W., is 212 miles; the central breadth, nearly between the bays of Dublin and Galway, is 110 miles; area, 32,531 square miles. Pop. about 4,390,000. Ireland is divided into four provinces of Leinster, Ulster, Munster, and Connaught, and into 32 counties; capital, Dublin; chief towns, Belfast, Cork, Limerick, and Londonderry.

Geology and Minerals.—The mountains are formed of vast masses of Primary and metamorphic rocks, while the Secondary formations spread over the interior. Basaltic rocks are almost entirely confined to the N. E., where they often form colonnades, of which the Giant's Causeway is a celebrated specimen. Granite has its largest develop-


IRELAND
SCALE OF STATUTE MILES
0 10 20 30 40 50
SCALE OF KILOMETERS
0 10 20 30 40 50 60 70 80
Important towns are shown in heavy face type
Important Railways
Canals
County Seats are underlined thus: Galway
A
B
C
D
E
F
10°
9°
8°
7°
6°
55°
54°
SCOTLAND
NORTH CHANNEL
IRISH SEA
ATLANTIC OCEAN
INISHTRAHULL
GARVAN IS.
RATHLIN I.
SANDA I.
TORY I.
INISHBOFIN
INISHTURK
INISHSHARK
INISHMURRAY
EAGLE I.
ACHILL
CLARE I.
CAHER
CONNEMARA
ARRAN I.
DONEGAL
LONDONDERRY
TYRONE
FERMANAGH
LEITRIM
SLIGO
MAYO
GALWAY
ROSCOMMON
LONGFORD
ANTRIM
DOWN
ARMAGH
MONAGHAN
CAVAN
LOUTH
MEATH
WESTMEATH
KING'S CO.
QUEEN'S CO.
KILDARE
WICKLAND
DUBLIN
Londonderry
Belfast
Lisburn
Downpatrick
Newry
Dundalk
Drogheda
Trim
Athlone
Sligo
Ballina
Castlebar
Westport
Roscommon
Longford
Mullingar
Tullamore
Maryborough
Naas
Wicklow
Arklow
Enniskillen
Omagh
Strabane
Letterkenny
Donegal
Ballyshannon
Bundoran
Carrick-on-Shannon
Boyle
Ballaghaderreen
Castlerea
Tuam
Loughrea
Ballinasloe
Portumna
Birr
Parsonstown
Edenderry
Kells
Navan
Ardee
Carrickmacross
Monaghan
Clones
Cootehill
Belturbet
Cavan
Granard
Mullingar
Athlone
Tullamore
Portarlington
Carlow
Tullow
Baltinglass
Rathdrum
Wicklow
Arklow
Gorey
Enniscorthy
New Ross
Wexford
Bantry
Skibbereen
Clonakilty
Kinsale
Cork
Youghal
Dungarvan
Lismore
Fermoy
Mallow
Tipperary
Cashel
Clonmel
Carrick-on-Suir
Waterford
Kilkenny
Thomastown
Callan
Carlow
Kildare
Naas
Dublin
Dublin Bay
Howth
Malahide
Lambay I.
Ireland's Eye
Skerries
Balbriggan
Drogheda
Dundalk
Carlingford
Warrenpoint
Rostrevor
Newcastle
Donaghadee
Bangor
Holywood
Carrickfergus
Larne
Ballycastle
Portrush
Coleraine
Limavady
Londonderry
Lough Foyle
Lough Swilly
Lough Neagh
Lough Erne
Lough Ree
Lough Derg
Lough Corrib
Lough Mask
Lough Conn
Lough Gill
Lough Allen
Lough Sheelin
Lough Ramor
Lough Owel
Lough Ennell
Lough Derravaragh
Lough Gowna
Lough Oughter
Lough Melvin
Lough Macnean
Lough Gara
Lough Key
Lough Arrow
Lough Carra
Lough Mask
Lough Corrib
Lough Conn
Lough Mask
Lough Corrib
Lough Derg
Lough Ree
Lough Allen
Lough Gill
Lough Melvin
Lough Erne
Lough Neagh
Lough Foyle
Lough Swilly

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ment in the S. E., where it forms the great mass of the mountains of Wicklow. It is more sparingly developed in the W. and N. W. (Donegal), as well as in the N. E.

Climate.—The climate is on the whole moister, milder, and more equable than that of the greater part of Great Britain. It is highly favorable to vegetation, and allows plants to winter in the open air that can do so in very few places in

BLARNEY CASTLE

Great Britain; some species of plants also being peculiar in Ireland alone of the British isles, as for instance the strawberry tree or arbutus, found in the S. W.

Agriculture.—As regards agriculture Ireland has great advantages, for though there is a great extent of moorland, there is also a vast area of arable surface, covered with a deep, friable loam of remarkable richness. Potatoes had become the main food of the people by the end of the 17th century, and a potato famine occurred as early as 1739. Another staple crop, especially in the N., is flax. Much benefit accrued to Irish agriculture from the operations of the Irish Land Act of 1881. This act was supplemented in 1887 and 1899 by acts to encourage peasant ownership.

Industries and Trade.—Of industrial employments the linen manufacture is the chief and is in a very flourishing condition. The woolen manufacture at the outset outstripped that of linen; but it was hampered by unjust restrictions imposed by Parliament at the instance of the woolen manufacturers of England. The brewing of porter and distillation of whisky form important industries. The fisheries employ a considerable number of persons.

Religion.—The prevailing religon is the Roman Catholic. The Reformation never made much progress, and though the Protestant Episcopal Church was established by law, it was only the Church of a minority. In 1869 an act was passed for its disestablishment. At the head of the Roman Catholic Church are four archbishops, who take the title of Armagh, Dublin, Cashel, and Tuam, and 24 bishops. The whole of the Irish Roman Catholic clergy are supported solely by voluntary contributions. The Presbyterian Church is chiefly confined to Ulster, where it may be said, especially in the counties of Down and Antrim, to be the leading religious denomination. Its ministers are supported by voluntary contributions, seat-rents, and church funds. They were formerly aided by the annual grant from government, called the *Regium Donum.* This grant was abolished by the Irish Church Act of 1869, and was commuted to a single sum of $3,506,860 paid to the Church.

Education.—The principal educational institutions are Dublin University and the three colleges of Belfast, Cork, and Galway. The Royal College of Science, established in 1867, supplies a complete course of instruction in science applicable to the industrial arts. The Catholic University of Ireland, established in 1854, consists of University College, Dublin; St. Patrick's College, Maynooth, and several other colleges. The seminaries for the education of the Catholic priesthood are numerous, the most prominent being the College of Maynooth, founded in 1795. The General Assembly's Theological College, Belfast, and the Magee College, Londonderry, are Presbyterian colleges. The chief elementary schools are those under the superintendence of the Commissioners of National Education. In 1878 an act was passed setting apart $5,000,000 from the Irish Church surplus fund for the promotion of intermediate secular education by means of special examinations, exhibitions, prizes, etc.

Government.—Ireland, by the Act of Union, became in 1801 an integral part of the United Kingdom, and shares in its legislation by means of 28 representative peers in the House of Lords, and 103 representatives in the House of Commons. The representative peers are elected for life by the whole of the Irish peers. The lord-lieutenant, who represents the sovereign, is the head of the executive, and holds his court in Dublin Castle. He is assisted by a privy council and a chief secretary, who takes the most active part in the administration of affairs. As in England, the chief legal functionaries are a lord chancellor, a lord chief-justice, and a master of the rolls. The Irish police force is a semi-military body, paid out of the Consolidated Fund.

History.—As in Western Europe generally, the earliest inhabitants are believed to have been of Iberian race, and, therefore, akin to the modern Basques. Divided among a number of hostile kings or chiefs, it had been long torn by internal wars, and for nearly two centuries ravaged by the Danes, numbers of whom settled in the country, when, in the beginning of the 11th century, Brian Boroimhé united the greater part of the island under his scepter, restored tranquillity, and subdued the N. invaders.

After the death of Brian at the close of the battle of Clontarf, 1014, gained against the Danes and their Irish allies, the island relapsed into its former state of division and anarchy. In this state of matters Henry II. of England obtained a papal bull giving him the right to subdue it, and the way was paved to this when Dermot, Prince of Leinster, who had been driven from the country, was reinstated by the aid of Richard de Clare (Strongbow) and other Norman nobles. In 1172 Henry entered Ireland himself, and partly through the favor of the clergy and his affability, the great princes did homage to him and acknowledged his supremacy. Many Norman barons and their followers now settled in the country, but the English power was far from being established over it.

Henry VIII. assumed (by act of the Irish Parliament) the title of King of Ireland, instead of "Lord," which he had before borne as a vassal of the Pope, and the Irish chiefs generally acknowledged his authority; but the change of religion was bitterly opposed, and Mary was easily able to undo all that had been done in this direction by her two predecessors. Elizabeth imposed a Protestant clergy on the people, and her reign was marked by a series of risings, which terminated in the reduction of the whole island. Great stretches were taken from the Irish chiefs, and distributed among English noblemen and others, who were to settle their new estates with English farmers. Little was done in this way, however, compared with the great plantation of the N. by James I., under whom 800,000 acres of land in Ulster were declared forfeited, a large part of this being entirely withdrawn from the Irish, and divided among Scotch or English settlers. In 1641 there began an attempt to shake off the English yoke, in which great atrocities were perpetrated on both sides. In 1649 Cromwell was appointed lieutenant, and energetically, but cruelly reduced the whole country within nine months. The next struggle was that which followed the Revolution, when James II. landed in 1689, and hoped to regain his crown by French and Irish aid. He failed to reduce Londonderry, which held out, enduring the extremity of famine, till it was relieved by some ships from England. In the following year (1690) William III. arrived, and on July 1 gained a decisive victory over the

ST. PATRICK'S GRAVE

forces of James on the Boyne, near Drogheda.

In 1778 the penal laws against the Catholics, though not repealed, were made much more lenient. The French Revolution had a great effect on the minds of the Irish people, and it was partly through this influence that the Society of United Irishmen was formed, and that rebellion broke out in 1798. Great atrocities were perpetrated, but the rising was speedily crushed. A body of French soldiers, 1,500 strong, landed in Killala Bay, but were compelled to surrender.

The British Government now resolved to unite the Irish and English Parliaments, and an act providing for the legislative union of the two countries passed the Irish Parliament in May, 1800, and the British Parliament in July of the same year, in virtue of which the union was effected on Jan. 1, 1801. In 1829, mainly through the efforts of O'Connell, the Catholic Emancipation act was passed under which Catholics could take a seat in Parliament, and were admitted to most public offices. The Irish National party now tried to repeal the Union, for which purpose O'Connell founded the Repeal Association. This movement collapsed in 1843, and afterward the potato famine in 1845, and again in 1846, cast all other interests into the background. To mitigate this calamity Parliament granted enormous sums of money; yet thousands died from starvation, and hundreds of thousands emigrated to America.

The year 1865 witnessed a new conspiracy designed to separate England and Ireland. This originated in the United States, when the numerous Irish during the Civil War in that country hoped for a rupture between it and England, of which they might take advantage. This conspiracy, the members of which called themselves "Fenians" (See FENIANS), soon spread to Ireland; but before they could take any overt actior in that island their design was stifled by the British Government (1865-1866). The ministry now resolved to do all in their power to render the Irish people loyal and contented; and accordingly the Irish Episcopal Church was disestablished in 1869, and another act was passed to improve the tenure of land, in 1870.

Since 1871 an agitation for what is called Home Rule has made itself prominent. Its chief supporters, designated "Nationalists," profess not to desire the severance of Ireland from Great Britain; what they mainly want, is to have an Irish Parliament for matters exclusively Irish. In 1880 Ireland became the scene of an agitation carried on mainly by a body known as the Land League. The movement was so lawless that two special acts, a "coercion" act and a peace preservation act, were passed. Still further to redress Irish grievances a land act was also passed in 1881, the chief provisions of which have already been mentioned. The Land League was suppressed, but a body called the National League was soon organized in its place. In 1885, 86 Nationalist members (under the leadership of Parnell) were returned to Parliament, and their pressure on the government led to Gladstone's scheme in 1886 by which Ireland was to receive a Parliament of her own and the Irish members to be withdrawn from the Imperial Parliament. This and the accompanying

VILLAGE IN SOUTH OF IRELAND

scheme for the buying out of Irish landlords, were rejected by Parliament and the majority of the constituencies, thus bringing a Conservative government under Lord Salisbury into power. A permanent act for the repression of crime in Ireland was passed in 1887, and an act (Lord Ashbourne's) for the benefit of Irish tenants, under which money is advanced to them to aid them in buying their farms. The agitation by the Home Rule party continued through 1892 and 1893, Gladstone advocating eloquently the cause of the Irish people. In 1900 the Irish Parliamentary party reconstituted itself with John Redmond as chairman. In 1903 the Wyndham Act was passed enabling tenants and occupiers to purchase the land and hold it. In 1906 James Bryce (now Viscount Bryce) began the work of creating the National University of Ireland making it possible for the Catholics to secure a higher education. Riots, and agrarian outrages, particularly "cattle driving," were frequent during 1907–09. The Home Rule Bill of 1912 (See HOME RULE) was opposed in Ulster and a volunteer army was enlisted by Sir Edward Carson to resist its enforcement. The Nationalists also formed a volunteer army and the country was divided into two hostile camps. A crisis arose in 1914 when the British Government moved to send troops to Ulster and a warship to Belfast.

The Sinn Fein, founded about 1905, had now become a revolutionary body, and seized the opportunity to unite with the Nationalists' Volunteer Army, drilling openly and secretly planning an uprising. On Easter Monday, April 24, 1916, the Rebels seized the Post Office and other public buildings in Dublin. The Irish Republic was proclaimed with Padraic Pearse, president, and James Connolly commandant of Dublin and Messrs. Clarke, MacDonough, Ceannt, Plunkett, MacDiarmid members of the provisional government. Sir John Maxwell commanded the British troops engaged in suppressing the rebellion which came to an end April 29 when Pearse surrendered. In the fighting the British lost 521 men. In May Pearse, Clarke, MacDonough, Plunkett and 11 others were executed. Over 3000 were imprisoned for taking part in the rebellion. Sir Roger Casement (q. v.) was hanged in England June 29, 1916.

In the general election held in December, 1918, the Sinn Fein overthrew the Nationalists but declined to take their seats in the English Parliament, agitating meanwhile for a separate government. At a conference held Jan. 21, 1919, independence was declared and the provisional government of the Republic of Ireland proclaimed. Eamon de Valera, Count Plunkett, and Arthur Griffith were appointed delegates to the Paris Peace Conference but were denied passports by the British Government. De Valera then sailed for the United States where he was received with enthusiasm by the Irish and hailed as the "President of the Irish Republic." An attempt was made by De Valera to get a strong plank inserted in the Republican and Democratic platforms during the presidential conventions of 1920 but only succeeded in securing an expression of sympathy for Irish national aspirations in these declarations.

Municipal elections held on Jan. 15, 1920, indicated the growth of the Sinn Fein movement, and indicated that a large element of the Irish people would be satisfied with nothing less than independence. Out of 1,240 vacancies, the Sinn Fein won 422, the Labor Party 325, the Nationalists 213, and the Unionists only 297. The Nationalists who favored Home Rule were ousted by the Sinn Feiners from almost every seat in Parliament, and as a result Ireland was almost without representation in the House of Commons during 1920.

In the meantime, violence continued to flourish. On March 10, Lord Mayor McCurtin, of Cork, was assassinated by masked men in his own house. His successor, Terence MacSwiney, was arrested on August 12, on charges of sedition, and following his conviction, immediately began a hunger strike which ended in his death on Oct. 25, 1920, after a fast of 74 days. Other Irish leaders who were arrested on similar charges, refused to eat and several of them died. The Sinn Fein established their own court and police, erecting an entire system of self-government under the eyes of British officials, while police, constabulary, and soldiers were assassinated or shot from ambush. On April 2, Sir Hamar Greenwood was appointed chief secretary to succeed Ian MacPherson. In May, civil war continued fiercer and many police barracks were burned. The government sent large forces to Ireland in command of Sir Neville McCready. The situation was further complicated by a strike of English railway dock and ship laborers who refused to move troops or munitions. The terror culminated in the partial burning of the city of Cork on the night of December 11, when 311 houses were burned and damage was done to the amount of $20,000,000. In the same month Parliament passed the Home Rule Bill in both houses, and it was signed by King George. It was left

at his nominal discretion to put into effect at any time within three years following its passage.

IRELAND, NATIONAL UNIVERSITY OF, an institution for higher education, established in 1908. It superseded the former Royal University of Ireland, and in its place was established the Belfast University and the National University of Ireland. The latter consists of the University College of Dublin, Queens College Court and Queens College, Galway. It was organized in order to meet with the wishes of the Roman Catholics. The institution, however, is undenominational. Religious instruction may be given, but not out of public funds. The enrollment in the University of Dublin in 1919 was about 1,800, with a faculty of 200.

IRELAND, ALLEYNE, an English author; born in Manchester, England, Jan. 19, 1871; was educated at Berlin University; traveled extensively in 1887–1897; was made lecturer on politics at Chicago University in 1900. He is the author of "Demerariana: Essays, Historical, Critical, and Descriptive" (1897); "Tropical Colonization: An Introduction to the Study of the Subject" (1899); "The Anglo-Boer Conflict: Its History and Causes" (1900); "China and the Powers" (1901); "Joseph Pulitzer" (1914).

IRELAND, JOHN, an American clergyman; born in Ireland, Sept. 11, 1838; came to the United States early in life, was educated in the Cathedral School of St. Paul; studied theology in France and was ordained a priest Dec. 21, 1861; was chaplain of the 5th Minnesota Volunteers in the Civil War. After the war he became rector of the cathedral in St. Paul; was later secretary and coadjutor to Bishop Grace, of St. Paul; was consecrated bishop in December, 1875, and archbishop in May, 1888. He was prominent in founding Roman Catholic colonies and in organizing total abstinence societies, and is especially noted for his sturdy Americanism.

He wrote "The Church and Modern Society" (1897). He died Sept. 25, 1918.

IRELAND, ISLAND, one of the Bermudas.

IRENÆUS (ī-ren-ē'us), a church father; born in Greece about 120, was a disciple of Polycarp, by whom he is said to have been sent to Gaul. On the martyrdom of Pothinus he succeeded him in the bishopric of Lyons, in 177. Irenæus was a man of considerable learning, and animated with ardent zeal for Christianity. The common idea that he suffered martyrdom rests on no good foundation. His great literary work is his refutation of the Valentinian form of the Gnostic heresy, and is usually named "Against Heresies." The best edition of his works was published in two volumes at Leipsic in 1853. He died about 202.

IRETON, HENRY, an English soldier; born in 1611. He studied at Oxford and at the Middle Temple, London, and on the breaking out of the Civil War offered his services to the Parliament. His connection with Cromwell, whose daughter Bridget he married in 1646, greatly advanced his interests. At Naseby he was taken prisoner by Rupert, but Cromwell's charge set him at liberty. Ireton was one of the most implacable enemies of the king, and signed the warrant for his execution. He accompanied Cromwell to Ireland, and in 1650 became lord-deputy. He died in Limerick, Nov. 15, 1651.

IRIARTEA (ir-rē-är'tē-ä), a genus of palms, of the Areceæ tribe. It consists of few species, all from South America. The hard outer wood of *I. exorrhiza,* the pashiuba or paxiuba palm of Brazil, is used in the United States for making umbrella handles.

IRIDEÆ, or **IRIDACEÆ** (i-rid'uh-ē, ī-rid-as'-ē-ī), a natural order of endogenous plants, mostly herbaceous, with bulbous, tuberous, or creeping root stocks; a few are somewhat shrubby. About 700 species are known, of which the greater number are natives of warm countries. They are particularly abundant in South Africa. A few are British. Iris, gladiolus, and crocus are familiar examples of the order. Acridity is a prevailing characteristic, and some species are medicinal; but the corms and root stocks of some are edible.

IRIDIUM (ī-rid'ē-um), a tetrad metallic element of the platinum group; symbol Ir.; at. wt. 193.1; discovered by Tennant in 1804, in the black powder which remains when crude platinum is dissolved in nitro-hydrochloric acid. This powder is an alloy of iridium and osmium, called iridosmine or osmiridium. Iridium is a white, brittle, very hard metal, fusible with great difficulty, in the flame of the oxy-hydrogen blowpipe. It is insoluble in all acids, but when reduced by hydrogen at a red heat it oxidizes slowly and dissolves in nitro-hydrochloric acid.

IRIS (ī'ris), in classical mythology, the messenger of the gods who carries messages from Ida to Olympus, or from the gods to men. In the "Iliad" the rainbow also was called Iris.

In astronomy, an asteroid of the group between Mars and Jupiter, discovered by Hind in 1847.

In botany, the flower-de-luce, the typical genus of the order *Iridaceæ*. The species are very numerous, and are generally remarkable for their large, yellow, white, or blue flowers, and sword-like leaves. They abound in Europe, but are rare in America. The rhizomes of several species are more or less purgative and emetic. Those of *I. florentina, pallida,* and *germanica* possess a violet odor, and are used in perfumery for imparting an agreeable odor to the breath, and by the French especially for making issue peas. These rhizomes, dried and scraped, constitute the orris root of the shops. The roasted seeds of *I. pseudacora,* the yellow flag, have been recommended as a substitute for coffee, but they do not appear to have any of the valuable properties of that beverage. The genus is so named on account of the variety of colors exhibited by it.

In anatomy, the anterior part of the choroid coat of the eye, with superadded muscular fibers.

In jewelry, the name given by French jewelers to limpid and transparent stones, but chiefly to rock crystal when reflecting prismatic colors like opal, by means of natural internal flaws.

IRISCOPE (ī′ri-skōp), an instrument invented by Dr. Reade for exhibiting the prismatic colors. It consists of a plate of polished black glass, having its surface smeared by a solution of soap, and dried by wash leather. If the breath be directed through a tube upon the glass, the vapor will be deposited in colored rays.

IRISH CHURCH, or **CHURCH OF IRELAND**, a popular name sometimes given, prior to 1871, to what was not an independent denomination, but was an integral part of the United Church of England and Ireland. It constituted the Established Church of the two countries. When on Jan. 1, 1871, the Act of Parliament disestablishing and disendowing the portion of the United Church which was in Ireland, took effect, those affected by the measure, rejecting the name proposed by the government for the new organization, adopted that of the Irish Church or the Church of Ireland. It comprehends within its pale about ⅛ of the Irish people.

IRISH MOSS, a seaweed very common on rocky coasts, and especially abundant on the W. side of Ireland. It is used as a substitute for arrow root.

IRISH PRESBYTERIAN CHURCH, a Presbyterian Church, formerly called the Synod of Ulster, as having its strength mainly within that province of Ireland.

IRISH SEA, a body of water lying between the N. of Ireland and the N. of England, with the S. W. counties of Scotland on the N. It is connected with the Atlantic on the N. W. by the North Channel and on the S. by St. George's Channel. Between the coasts of Louth (Ireland) and Lancaster the Irish Sea has a width of 150 miles; its greatest length N. and S. is about the same. Within its boundaries lie the Isle of Man and Anglesey, with Holyhead Island.

IRITIS, or **IRIDITIS** (ī-rī′tis, ī-rid-ī′tis), an inflammation of the iris, accompanied by vascularity, change in color and appearance, irregularity and immobility of the pupil, with a visible and varying amount of lymph deposited in, on, and round the iris.

IRKUT (ēr′köt), a river of Siberia, in the district of Irkutsk, rising in the mountains of Sayansk, near the frontiers of China, and after a course of 220 miles flowing into the Angara at the town of Irkutsk.

IRKUTSK (ēr′kötsk), a government of Eastern Siberia, separated from China on the S. by the Sayan Mountains, from Transbaikalia on the E. by Lake Baikal, and bounded W. by Yeniseisk, and N. and N. E. by Yakutsk, occupies an area of 287,061 square miles. The country is generally mountainous, but produces rye, barley, oats, and vegetables. The most important river is the Angara or Upper Tunguzka (1,000 miles), which connects Lake Baikal with the river Yenisei. The Lena and its tributary the Vitim are the rivers that come next in size. Gold, iron, and salt figure foremost among the mineral products. Agriculture, cattle breeding, and the transport of goods to and from China are the chief occupations of the people. Pop. about 850,000, consisting of Buriats, Tungus, and Russians. The industries are brandy distilleries, with iron foundries and factories for salt, cloth, and pottery.

Irkutsk, the capital, on the Angara, is the best-built town in Siberia. It possesses a cathedral, several churches, a public library, a museum of natural history, etc. Pop. about 70,000, mostly Russians and Buriats. Irkutsk was founded by a Cossack chief, Ivan Pochabof, in 1652, and obtained town rights in 1686. Owing to its position on the great Siberian highway between China and Russia, it is the commercial center of Siberia, especially for the tea trade; the annual value of its trade amounts to

about $7,000,000. The Angara constitutes the main highway for goods bound for Kiachta across Lake Baikal, as well as for those coming from Eastern Siberia and China for Russia. The communications between Irkutsk and Yakutsk and the N. parts of Siberia are carried on by the river Lena. A destructive fire occurred in 1879.

IRON AND STEEL. Iron, in chemistry, ferrum, is a metallic tetrad element, symbol Fe. at. wt. 56, sp. gr. of pure iron 7.8. Iron occurs nearly pure or alloyed with nickel in meteorites, but is generally found in combination with oxygen and as a carbonate. It is widely diffused in rocks, and often forms the chief coloring matter of clays and sands. It also occurs combined with sulphur. The chief ores used for the manufacture of iron are magnetite, hæmatite, brown oxide, spathic ore and clay ironstone. The ore is first calcined, to expel the water and carbonic acid and most of the sulphur, and to convert the oxides to peroxide, which prevents the waste of iron in the form of slag. The calcined ore is then smelted, with the addition of coke and limestone; the limestone unites with the silica present and forms a fusible slag, while the oxide of iron is reduced by the action of the carbon monoxide. The iron thus obtained is called cast or pig iron, and is very impure. Pure iron is prepared by placing four parts of fine iron wire, cut in pieces, and one part of black oxide of iron in a Hessian crucible, and covering it with a mixture of white sand, lime, and potassium carbonate in the proportions used for glass-making; a cover is then closely applied and the crucible exposed to a very high temperature. Iron is a soft, tough, tenacious, malleable, ductile, white metal, not acted upon by dry air; but it rusts in moist air containing carbonic acid, forming a hydrate of the sesquioxide.

Iron is mentioned in the Bible as early as Gen. iv: 22. On the sepulchers of the Egyptian Thebes, butchers are depicted as sharpening their knives on a round bar of metal which, from being blue, is assumed to be iron. Iron ore is said to have been discovered in Mount Ida about 1406 B. C. The Romans early knew it. Iron mines came into operation in Britain 54 B. C. The exportation of iron was prohibited by the British government in 1354, and in 1483 the importation of such manufactured iron goods as could be made at home was forbidden. In 1783 Cort obtained a patent for rolling, and in 1784 for puddling iron. The hot blast was discovered by Dalton in 1827, and the Bessemer process for converting crude iron into manufactured iron and steel in 1856.

Native iron is found in masses or smaller portions in meteorites. It is nearly pure, still it contains 1 to 20 per cent. of nickel with traces of cobalt, manganese, tin, copper, chromium, phosphorus, etc. Specimens of ore so pure as to admit of direct forging into horseshoes have been mined at Shepherd's Mountain, in the Iron Mountain district of Missouri.

The following table shows the iron ore shipped from the mines of the United States in 1918 and 1919, by States:

State	1918 Quantity (long tons)	1918 Value	1919 (estimate) Quantity (long tons)	1919 (estimate) Value
Alabama	6,121,087	$15,334,561	4,837,000	$13,203,000
California	3,121	14,683	[a]	[a]
Georgia	262,003	878,612	85,000	389,000
Maryland	6,070	23,686	[a]	[a]
Michigan	17,587,416	65,900,501	13,088,000	47 837,000
Minnesota	43,263,240	144,706,532	34,593,000	128,789,000
Missouri	71,968	270,337	[a]	[a]
New Jersey	375,238	1,945,651	331,000	1,593,000
New Mexico	275,266	546,212	[a]	[a]
New York	899,970	5,802,870	648,000	3,694,000
North Carolina	108,332	604,592	67,000	240,000
Pennsylvania	515,845	982,173	543,000	892,000
Tennessee	408,954	1,184,546	271,000	932,000
Utah	52,722	168,438	[a]	[a]
Virginia	400,135	1,365,582	290,000	1,150,000
Wisconsin	1,167,640	3,796,408	782,000	2,859,000
Other States [b]	502,195	842,763	784,000	1,696,000
	72,021,202	$244,368,147	56,319,000	$203,274,000

[a] Included under "Other States."

[b] 1918: Colorado, Connecticut, Idaho, Massachusetts, Montana, Nevada, Texas, Washington, and Wyoming; 1919: Same States as in 1918, with California, Maryland, Missouri, New Mexico, and Utah in addition.

The total stocks of iron ore for 1919 were estimated at 12,986,000 long tons.

The production of iron in most foreign countries was seriously curtailed during the war, and in some countries it was entirely cut off. In 1918 the following

countries produced the chief supply, outside of the United States: Cuba, 653,829 metric tons; Newfoundland, 769,821 metric tons; France, 1,671,851 metric tons; United Kingdom, 15,285,083 metric tons; Algeria, 782,047 metric tons.

The imports of iron ore into the United States in 1919 amounted to 476,461 long tons, valued at $2,385,689. The exports amounted to 996,569 long tons, valued at $4,308,746. The total production of pig iron in 1919 was about 30,646,000 long tons, valued at $809,246,000. There were exported 321,261 long tons of pig iron, valued at $12,313,183.

There were in Dec. 31, 1919, 262 blast furnaces in operation. There were at the end of 1919 22 open hearth furnaces in the course of construction.

The steel produced in the United States in 1918 amounted to 44,462,432 long tons. Of this 9,376,235 tons were Bessemer steel, 34,459,391 tons were open hearth steel, 115,112 tons were crucible steel, and 511,693 tons were other steel. Steel production in other countries in 1918 was as follows: United Kingdom, 9,744,891 metric tons; Germany, 14,875,753 metric tons; France, 1,809,771 metric tons; and Canada, 1,717,318 metric tons.

IRON AGE, in classical mythology, the last of the four great ages of the world described by Hesiod, Ovid, etc. It was supposed to be characterized by abounding oppression, vice, and misery.

In scientific archæology, an age, the third in succession, in which weapons and many other implements began to be made of iron, stone having been used for these purposes in the first, and bronze in the second. As the advancement of each tribe or people is not necessarily at the same rate as that of their neighbors, the Iron Age probably did not begin everywhere simultaneously. In Denmark, and perhaps some of the adjacent regions, it may have commenced about the Christian era.

IRON BARK TREE, a name given in Australia to certain species of eucalyptus, and particularly *E. resinifera*, or red gum, on account of the extreme hardness of the bark.

IRON CROSS, a Prussian order, instituted Mar. 10, 1813, by Frederick William III., to be conferred for distinguished services in war. It was made of iron to commemorate the grim "iron" period at which it was created. The decoration consists of a maltese cross of iron, edged with silver, and is worn round the neck or at the buttonhole. The order was revived by William I. in 1870, on the eve of the great war with France. The grand cross, a cross of double the size, is presented exclusively for the gaining of a decisive battle, or the capture or brave defense of a fortress. In the course of the Great War (1914–18) the Emperor Wilhelm II. awarded over a hundred thousand crosses to the German troops and officers.

IRON CROWN, a crown of gold set with jewels, made originally for the kings of Lombardy, and deriving its name from the fact that it inclosed within its round a circlet of iron, said to have been forged from one of the nails used in the crucifixion of Christ. It was supposed to confer upon the holder sovereignty over all Italy. Napoleon I. was crowned with it at Milan on May 26, 1805.

IRON GATE OF FRANCE, a name for the town of Longwy, a fortress of France on the Belgian frontier. Louis XIV. gave it the name.

IRON HAND, THE. See BERLICHINGEN, GŒTZ VON.

IRON MASK, MAN IN THE, a mysterious French prisoner, confined in the Bastille and other prisons in the reign of Louis XIV., who has been the subject of numerous plays, stories, and novels. Funck-Brentano in his work on the Bastille proves conclusively that this person was one Matthioli—secretary to the Duke of Mantua who was found guilty of treason and imprisoned for life. The mask he was compelled to wear was of black velvet stretched over a steel frame.

IRON MOUNTAIN, a city and county-seat of Dickinson co., Mich.; on the Chicago and Northwestern, the Chicago, Milwaukee and St. Paul and the Wisconsin and Michigan railroads, 50 miles N. W. of Escanaba. It derives excellent water power from the Menominee river; is the trade center for miners of Dickinson county and the adjoining farming section in Wisconsin; and is almost wholly engaged in iron mining. The city has several daily, weekly, and monthly periodicals, and a national bank. Pop. (1910) 9,216; (1920) 8,251.

IRONS, shackles, fetters, or bilboes for the feet, especially such as are used on board ship.

IRONSIDES, a name popularly applied to the regiment of a thousand horse which Cromwell raised mainly in the E. counties for service against the king early in the great Civil War. The name, already given for his bravery to an English king, Edmund, was first attached to Cromwell himself, but passed to the men at whose head he first appeared at Edgehill.

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THE GIANT'S CAUSEWAY, ON THE COAST OF ANTRIM, IN NORTHERN IRELAND

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A STREET IN BELFAST, IRELAND

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O'CONNELL BRIDGE AND SACKVILLE STREET, DUBLIN, IRELAND

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DRYING PEAT IN IRELAND, WHERE PEAT IS AN IMPORTANT FUEL

© Ewing Galloway

IRRIGATION DAM, KING'S RIVER, FRESNO CO., CALIFORNIA. THE INTAKE GATE IS AT THE LEFT AND THE RIVER AND DAM AT THE RIGHT

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IRRIGATION IN THE IMPERIAL VALLEY, CALIFORNIA. A FIELD OF CANTALOUPES

© *Underwood & Underwood*

IRRIGATED ONION FIELD IN TEXAS

Photo Brown Bros.

IRRIGATED SUGAR CANE IN AUSTRALIA

IRON STONE, a "stone" or mineral into the composition of which iron largely enters.

IRONTON, a city and county-seat of Lawrence co., O.; on the Ohio river, and the Cincinnati, Hamilton, and Dayton, Detroit, Toledo and Ironton and the Norfolk and Western railroads; 127 miles S. of Columbus. It contains a Memorial Hall, Masonic and Odd Fellows' Halls, city hospital, Briggs Public Library, Kelley and Riverview Parks, electric street railroad and lighting plants, Holly system of waterworks, 3 National banks, and manufactories of fire brick, iron and steel, nails, and other commodities. The city is the mining, manufacturing, and farming trade center for a region within a radius of 30 miles, and is at the base of a range of lofty hills containing large deposits of iron ore and bituminous coal. Pop. (1910) 13,147; (1920) 14,007.

IRONWOOD, a name given to various trees from the quality of their timber. The ironwood or hop-hornbeam of America (*Ostrya virginica*), order *Cupuliferæ*, is a tree with a trunk not exceeding six inches in diameter, with very hard wood, so heavy that it sinks in water, and foliage resembling that of birch. The species of the genus *Sideroxylon*, known as ironwood, are natives of the tropics and also of New Zealand, the Cape, etc. The *S. inerme*, or smooth ironwood of the cape, has long been cultivated in the greenhouses of Europe. *Diospyros Ebenum* (the ebony) is also named iron wood, as is the *Metrosideros vera* of Java.

IRONWOOD, a city in Gogebic co., Mich., on the Chicago and Northwestern and the Minneapolis, St. Paul and Sault Ste. Marie railroads; 39 miles E. of Ashland, Wis. It is the trade center for the famous Gogebic iron region. Here is the Norrie Mine, once the largest producer of iron ore in the world, and there are also other large mines. The city has a National bank, trolley line connecting with Hurley and Gile, Wis., weekly newspapers. Pop. (1910) 12,821; (1920) 15,739.

IRONY, a kind of ridicule which exposes errors or faults by seeming to approve, adopt, or defend them. The Socratic irony is employed in argument when one speaker affects to take the positions of the other for granted, in order adroitly to lead him into self-contradiction or obvious absurdity. Veiled sarcasm is a brief modern definition of irony.

IROQUOIS (ir'ō-kwois), a confederation of Indians formerly occupying the W. and central portion of New York State, consisting at first of five tribes, the Oneidas, Mohawks, Cayugas, Senecas, and Onondagas. In 1712 the Tuscaroras were admitted to the league, which adopted the title of the "Six Nations," and is so known to history. The Iroquois were at once the most powerful and the most enlightened; they lived in villages and pursued agriculture. In the Revolutionary War they were allies of the English, but in 1779 they were attacked by General Sullivan, and greatly injured. The Iroquois present the curious anomaly among Indian peoples of steadily increasing in numbers since 1812. Most of them have been removed to various reservations farther W.

IRRATIONAL, in mathematics any quantity which cannot be exactly expressed by an integral number, or by a vulgar fraction: thus $\sqrt{2}$ is an irrational quantity, because we cannot write for it either an integral number or a vulgar fraction; we may, however, approximate to it as closely as may be desired. In general, every indicated root of an imperfect power of the degree indicated is irrational. Such quantities are often called surds.

IRRIGATION, the process of watering or moistening land by ditches or other artificial means. It is probably the earliest application of science to agriculture. During the last half of the 19th century the lands watered from the ancient irrigation works of India were more than trebled by the completion of the Ganges canal system, the largest and costliest in the world, and by the more systematic and effective operation of works previously built. The land reclaimed and the value of the products of irrigation in the historic Nile valley have been largely augmented with the completion of the great dam at Assuan, at a cost of $24,000,000. Since the construction of the first ditches in Utah by the Mormon pioneers, irrigation has marvelously extended the domain of enterprise and civilization in all parts of the world. It has wholly changed the appearance and prospects of the W. third of the United States. It promises to make the Northwest Provinces of Canada one of the grain fields of the British empire. The irrigated farms of the Australian provinces of Victoria and New South Wales already rival, and will in time surpass, in value the livestock industries which were first established on the arid plains of that continent. Within the past quarter of a century irrigation has made the Hawaiian Islands one of the chief sources of supply for the

sugar consumed in the United States. It has increased the population and agricultural wealth of New Zealand and been greatly extended in Mexico and Central America.

Methods.—The water used on the greater part of the irrigated area is distributed by gravity. The supply is tapped at a point higher than the land to be watered; thence it is carried in canals or ditches, which follow the contour of the country, to the place of use. Many of these canals are important engineering achievements. The Cavour Canal, in Italy, cost over $17,000,000, and has doubled the population of the valley of the Po in the past 40 years. The Ganges Canal is the greatest system in India. The upper Ganges has 890 miles of main channel, 3,700 miles of laterals, 282 miles of outlet channels, 31 locks, 202 bridges, and 17 dams. It was completed in 1884, irrigates 1,205,000 acres, and cost $14,644,000. The lower Ganges system embraces 531 miles of main canal and 1,854 of lateral canals. It irrigates 620,000 acres, and cost $7,000,000. The W. Jumna Canal, begun in 1875, has cost over $8,000,000, and has a total length of 1,200 miles. In the United States there are several canal systems, and at Lagrange, California, is the highest overfall dam in the world. The lifting of water from wells or streams by hand or by oxen was one of the great means of ancient irrigation. In recent years this has been supplemented by an important use of steam-pumping plants. There are 1,500 of these in the San Joaquin valley of California alone. A large part of the water used in the irrigation of cane in the Hawaiian Islands is raised by pumps. Some of these are of extraordinary size and capacity, being capable of lifting 20,000,000 gallons 500 feet vertically in 25 hours. The method of distributing water from canals must vary according to the amount of water available, the nature of the soil, the topography of its surface, and the character of the crop, and there can be no single best method under all circumstances.

Flooding.—Under the flooding system small parallel ditches are constructed about 100 feet apart, the plans varying with the slope of the ground. These small ditches are usually fed from a lateral from the main canal. Where the surface is broken, they will be irregular in outline, and will generally approximate a right angle to the steepest slope of the soil. They are usually simply furrows made with a heavy mould-board plow, and where the crop is grain they are filled back by the plow before harvesting. In the distribution of water they are cut at convenient points to allow the water to run out and spread over the surface. The water thus released if left alone would follow the lines of quickest descent, and in doing so spread out as it proceeds, dividing into numerous branches or rills as it increases its distance from the opening of the ditch. For the purpose of facilitating its spreading and to insure its application to every portion of the surface, the irrigator follows its course and guides it by moving a few shovelfuls of earth here and there, thus separating the various small rills and starting the branches in different directions. This is a cheap but somewhat disagreeable method, because the irrigator has to work in the water and use all his strength and speed in order to direct the water so that it will reach all points, which it seldom does in equal volume. It has for its chief claim cheapness and speed, but sacrifices economy. Under this system an experienced irrigator can cover from 10 to 20 acres a day, the area depending on the character of the land, the uniformity of the surface and the volume of water at his disposal. For such crops as grain, alfalfa, clover, and the various grasses, and for everything which is sown broadcast and is distributed uniformly over the surface, the flooding system is employed.

Checks.—A modification, and in some respects a great improvement, of irrigation by flooding consists in the use of what are called compartments or checks. It is really flooding by the use of levees, which restrict the movement of the water to definite areas, thus giving assurance that it shall remain on this area till it sinks out of sight or is drawn off. The compartments or squares vary in size according to the slope of the ground and with the locality. The Mexican irrigators in the S. W. make compartments less than 100 feet square, while in California and Arizona they often contain several acres.

Furrow Method.—Under this method parallel furrows are plowed which lead from the lateral used across the rows of crop to be irrigated. A small opening is made in the ditch to let the water between each of these rows. There are numerous devices for regulating the turning of water into the furrows from the field lateral, the simplest being the placing of a dam of canvas or earth below the opening through which water is to be run; but in many places the lateral is constructed permanently, often consisting of a plank or cement flume with openings in its side, having ad-

justable gates by which the amount of water delivered to each furrow can be regulated. In the application of this water the attention of an irrigator is required to see that the proper amount is kept in each furrow, and that it does not break out and flood the surface, leaving the furrow beyond the break without moisture. The success of this system depends on having a soil in which vertical percolation is not excessive and lateral movement is adequate. The furrows must be so constructed as to maintain the velocity of the water within the safe limit permitted by the character of the soil; otherwise there will be an injurious erosion of the furrows. Where these conditions are secured it has several advantages; it thoroughly soaks the soil and accomplishes the distribution of moisture without saturating the surface and causing it to run together, as it does where water stands on it. In cultivating crops the displacement of the soil is reduced to a minimum; hence, the labor is reduced and the cost is less than by any method which distributes water so evenly and thoroughly. There is less loss from evaporation because a less area of water is exposed to the action of the air and sun.

Subirrigation.—Introducing water below the surface for the watering of crops has several obvious theoretical advantages, such as the preventing of loss by evaporation, distributing water at levels which will encourage plants to strike their roots deep in the soil, and the reducing of frequent surface cultivation, which have caused inventors and cultivators to labor to secure a system which would be effective and cheap enough for general adoption, but thus far without complete success.

Irrigation Laws and Institutions.—In France, Spain, Italy, Egypt, and India all the more important irrigation works are owned and controlled by the government. In Italy, especially, irrigation is highly developed. Most of the water for irrigation purposes is drawn from the Po river and from lakes Maggiore and Como. In undeveloped and sparsely settled countries like Australia nearly all that has been done is the result of private enterprise. In Canada all streams are state property and all irrigation works are built under licenses issued by the government, and in accordance with the plans prepared or approved by it. The Reclamation Service in the United States, operated by the national government, was established by the Reclamation Act of June 17, 1902. By 1920 some 3,000,000 acres of land located in semi-arid and arid regions had been made valuable both from the standpoint of agriculture and of homesteading. The irrigation projects are in Ariz., Cal., Colo., Idaho, Kan., Mont., Nebr., Nev., N. M.,

State	Project	Estimated area on completion	Gross cost
		Acres	*Dollars*
Arizona	Salt River	192,077	15,106,943
Arizona-California	Yuma	110,000	9,495,570
California	Orland	20,533	1,048,298
Colorado	Grand Valley	50,000	3,545,157
	Uncompahgre Valley	100,000	7,341,651
Idaho	Boise	327,552	12,758,216
	King Hill	16,385	591,362
	Minidoka	121,392	5,998,863
Montana	Huntley	32,885	1,750,943
	Milk River	181,000	5,955,475
	Sun River	174,620	3,775,096
	Blackfeet	118,500	1,048,250
	Flathead	134,500	3,761,877
	Fort Peck	152,000	704,534
Montana-North Dakota	Lower Yellowstone	59,613	2,915,090
Nebraska-Wyoming	North Platte	251,715	10,643,517
Nevada	Newlands	231,000	6,384,544
New Mexico	Carlsbad	24,991	1,383,458
New Mexico-Texas	Rio Grande	162,000	9,775,296
North Dakota	North Dakota Pumping	26,151	721,163
Oregon	Umatilla	36,300	2,473,191
Oregon-California	Klamath	141,444	3,092,101
South Dakota	Belle Fourche	97,889	3,479,802
Utah	Strawberry Valley	60,000	3,506,004
Washington	Okanogan	10,099	947,029
	Yakima:		
	Storage unit	.....	3,783,105
	Sunnyside unit	110,828	3,355,599
	Tieton unit	32,000	3,380,284
Wyoming	Jackson Lake enlargement	.....	783,153
	Riverton	100,000	71,918
	Shoshone	136,618	6,109,061
Total		3,212,092	135,686,549

N. Dak., Okla., Ore., S. Dak., Utah, Wash., Wyo., Texas. The funds for this work come mainly from the sale of public lands and from oil-leasing royalties. According to the Reclamation Extension Act of Aug. 13, 1914, the money expended is returned to the fund by the settlers, through payments in fifteen or twenty annual installments, without interest. Over 400,000 persons are living on the 1,780,000 acres irrigated by the Reclamation Service. The value of the crops in 1920 on the project land was nearly $114,000,000. In 1902 the average value of the desert land was not more than $10 per acre. Since the government has undertaken the irrigation of this territory, the average value has increased to $200 per acre, or a total of over $350,000,000. More than 13,000 miles of canals and ditches have been built on the projects. The Reclamation Service in 1920 served 2,845,000 acres of land, including 1,662,000 acres for which the government furnished the total water supply, and 1,183,000 acres to which the government sent stored water as an aid to the supply of private streams. The Mexican Government has taken an interest in the question of irrigation, and has appropriated over $20,000 to be used for the improvement of the Yaqui River Valley, Sonora. The table on page 199 shows the principal United States irrigation projects and their cost up to June 30, 1919.

IRRITABILITY, in anatomy, vital contractibility, the property of visibly contracting even after death, on the application of a stimulus. The right auricle has been found irritable for 16½ hours after death. A voluntary muscle has been found irritable 24 hours after death.

In botany, excitability of an extreme character, in which an organ exhibits movements different from those commonly met with in plants. Its known causes are three—atmospheric pressure, spontaneous motion, and the contact of other bodies. Thus plants sleep, the compound leaves, where such exist, folding together; so also the sensitive plant shrinks from touch.

IRRITANT, in pharmacy, that which produces irritation or excitement of any muscle, nerve, or other organ or part of the body. A pure irritant is a poison producing inflammation without corrosive action on the tissues.

IRTISH (ēr'tish), a river of Siberia, the chief affluent of the Obi, rises at the E. end of the Altai Mountains, passes through Lake Saisan, breaks through the Altai in the W. at the bottom of a savage gorge, and flows N. W. across the steppes of Western Siberia to join the Obi, from the left, at Samarow. At that point it has a width of 2,000 yards; its total length is 1,620 miles; the area of its basin, 647,000 square miles. The important towns of Semipalatinsk, Omsk, and Tobolsk stand on its banks. From April to November it is navigable from its mouth as far as Lake Saisan; during the rest of the year traffic is carried on by means of sledges. Its current is gradually shifting E. Its best known tributaries are the Buchtarma and Om from the right, and the Tobol and Ishim from the left.

IRUS (ī'rus), a beggar of Ithaca and lover of Penelope, killed by Ulysses by a blow with his fist.

IRVING, SIR HENRY, an English actor; born in Keinton, England, Feb. 6, 1838. His family name was Brodribb, which was changed to Irving by royal patent. He was trained to mercantile life, but went upon the stage in 1856, appearing in London a few years later. His rôles include Mephistopheles, Hamlet, Coriolanus, King Lear, Louis XI, Malvolio, Macbeth, and a repertory that has been presented not only in England, but in the United States, Australia, and France. He was knighted in 1895. He has published an edition of Shakespeare. He died Oct. 13, 1905.

IRVING, HENRY BRODRIBB, an English actor, son of Sir Henry Irving, born in 1870 in London. He was educated at New College, Oxford, and entered the bar in 1894. He soon gave this up for the stage, where he soon became a prominent figure. He became a manager in 1902. In 1906 and 1907 he made a tour in America which was followed by tours in Australia and South Africa. Following his return from the latter, he leased the Savoy Theater. He appeared as star in many successful plays. He wrote "Life of Judge Jeffreys" (1898); "Occasional Papers" (1906); "The Trial of Mrs. Maybrick" (1913). He died in 1919.

IRVING, ISABEL, an American actress, born in Bridgeport, Conn., in 1871. She made her first appearance on the stage in 1887, and within a short time had become the leading woman at the Lyceum Theater in New York and in John Drew's Company. For several years she played leading parts in England. She played as leading woman and as star in many important plays. In 1889 she married William H. Thompson.

IRVING, LAWRENCE (SYDNEY BRODRIBB), an English actor and

manager, son of Sir Henry Irving, born in 1872. He was educated at Marlborough College and in Paris. For three years he lived in Russia where he studied diplomacy. He left this for the stage in 1893. After tours in provincial companies, he played in his father's company from 1900 to 1904. This was followed by a tour in America. In 1912 he played leading parts in several important plays, including several Shakespearian plays. While returning to England in May, 1914, he was drowned in the "Empress of Ireland" disaster. He wrote several plays, including "Peter the Great"; "Richard Lovelace"; "The Typhoon."

IRVING, WASHINGTON, one of the greatest American authors of the nineteenth century, born in New York in 1783. Most of his early education was gained by tramping through the beautiful Westchester region and the Hudson Highlands, by lounging on the docks to watch the arrival and departure of the ships that seemed to him to ply between fairy lands of romance and his native city, and by visits to the theatre and reading whole libraries of romance. He studied law, but rebelled against it, and did not make a very active practitioner. He had no taste for politics, his leaning being rather toward Hamilton's theories than Jefferson's. In his letters, and in his "Knickerbocker History of New York," he expresses distaste for many of the aspects of American politics, and he satirizes Jefferson's conduct of foreign affairs. His first writings were rather thin imitations of the eighteenth century English essayists, satires on fashions and manners, the first of them published in his brother Peter's newspaper, and continued, after his return from his first European journey, in "Salmagundi." This last, in which he had as collaborators his brother William and James Kirke Paulding, appeared twice a month for about a year (1807), and made a prodigious success.

Meantime, Irving went abroad (1804–1806) where he indulged to the full his love of romance and tradition surrounding ancient lands and cities. "My native country was full of promise," he wrote; "Europe was rich in the accumulated treasures of age." It became one of the objects of his life to give, so far as literature could avail, something of the charm of tradition to what he held to be a natural setting as romantic, especially around New York, as any scenes to be found abroad. He found his first opportunity to do this in his "Knickerbocker History" (1809), first planned as a burlesque of a pompous and pedantic work by Dr. Samuel Mitchill but soon developing into an independent work of astonishing variety and charm. The book owes much to Rabelais, "Don Quixote," and other writers of burlesque romance, and also to Fielding, Sterne and other English masters of the eighteenth century; but it also has a high originality of its own. His portraits of the Dutch governors; his satire of contemporary politics under the guise of a sober history of the old Dutch colony; the abounding spirits and rollicking humor; the remarkable way in which it translates the spirit of old romance

WASHINGTON IRVING

to the American continent; above all, the *flavor* of the book, urbane, witty, keen, even if often exaggerated,—these make it the first important work of the pure imagination to appear in America. He published it as if it were the work of an imaginary Dr. Diedrich Knickerbocker, who has become a well known figure in American letters; he dedicated it to the New York Historical Society, and it has often been classed by librarians among legitimate "histories."

After this success Irving published nothing for ten years. He attempted to practice law, engaged mildly in politics, revised his "History," edited a magazine, but devoted most of his time to society. During the war with England he was military secretary to the governor of New York. In May, 1815, he sailed once more for England, expecting only to pay a short visit to his brother, but seventeen years passed before his re-

turn. Though he was offered various literary posts in England, chiefly through the friendship of Sir Walter Scott, he refused to do anything that might look like an abandonment of his native country. The "Sketch Book," his most famous work, appeared in parts from May, 1819, to September, 1820. In 1822 appeared "Bracebridge Hall" and two years later "Tales of a Traveller." In these books he links America and England in a series of essays, tales, and descriptive sketches, all of them marked by urbanity, humor, and by a finish of style previously unknown in American prose. The most famous of the sketches deal with certain folk legends, some of them from the Harz mountains, which he translated to the romantic region of the Catskills and old New York with its picturesque Highlands to the north. As in "Knickerbocker," he sought "to clothe home scenes and places and familiar names with those imaginative and whimsical associations so seldom met with in our new country, but which live like spells and charms about the cities of the old world."

From 1820 to 1826 he travelled in France and Germany, and in the latter year went to Spain, where he spent three years. Here he became interested in historical work, the results being his "Life of Columbus" (1828); "Conquest of Granada" (1829); and "The Alhambra" (1832). Returning to England, in 1829, as secretary of the American legation, he was awarded a medal by the Royal Society and the degree of D.C.L. by Oxford. At length, in 1832, he returned to America, settling at Tarrytown, since famous as "the Irving country." He was offered various political posts, which he declined, but in 1842 accepted an appointment as Minister to Spain, where he spent four years. His last works were the "Crayon Miscellany" (1835); "Captain Bonneville" (1837); "Oliver Goldsmith" (1849); "Mahomet" (1849); "Life of Washington" (1859). He died 28 November, 1859, at "Sunnyside," Tarrytown.

IRVINGTON, a city of New Jersey in Essex co. It adjoins Newark of which it is a suburb. It has important industries, including smelters, foundries, automobile works, oil refineries, etc. There is a hospital, Bethany Home, Elks Home, a park, and a town hall. Pop. (1910) 11,877; (1920) 25,466.

IRWIN, MAY, an American actress, born in Whitby, Ontario, in 1862. She first appeared on the stage in 1876 and for many years following was a member of Tony Pastor's company. She later appeared under the management of Charles Frohman in many successful plays. She was one of the most popular comédiennes on the American stage.

IRWIN, WALLACE (ADMAH), an American writer, born in Oneida, N. Y., in 1876. He was educated at Denver High School and at Leland Stanford University. He became a special writer on newspapers and was for a time editor of the "San Francisco News Letter." His humorous writings in newspapers attracted wide attention, especially of the publications in 1902 of "The Love Sonnets of a Hoodlum." This was followed by many other pieces of humorous verse which obtained a wide circulation. He also wrote much prose in a humorous vein. In addition to these he wrote novels and special articles. His best known works are "Chinatown Ballads" (1905); "Letters of a Japanese Schoolboy" (1909); "Pilgrims Into Folly" (1917); "The Blooming Angel" (1919).

IRWIN, WILLIAM HENRY, an American journalist, writing under the name of Will Irwin, born in Oneida, N. Y. in 1873, brother of Wallace Irwin. He graduated from Stanford University in 1899. He acted as editor for several papers in San Francisco in 1906–7 and was managing editor of "McClure's Magazine." From 1908 he was a magazine writer. He acted as war correspondent during the World War for American and British papers and magazines. He was a member of the executive committee for the Commission for Relief in Belgium, in 1914–15. In 1918 he acted as chief of the foreign department on the Committee of Public Information. In addition to his war correspondence, he published several novels. His published writings include "The City that Was" (1907); "Old Chinatown" (1908); "The House of Mystery" (1910); "The Red Button" (1912); "The Splendid Story of Ypres" (1915).

ISAAC, one of the patriarchal ancestors of the Hebrew nation and of Christ, son of Abraham and Sarah; born 1896 B. C. At the age of 40 he married Rebecca, by whom he had two sons, Esau and Jacob; the former becoming the founder of the Edomites, and the latter, under the name of Israel, the parent of the Twelve Tribes, or the Israelites. Isaac lived to attain his 180th year, dying 1716 B. C.

ISAAC I., COMNENUS, Emperor of Constantinople, was the first of the Comneni who attained that dignity. Under the successors of Basil II. Isaac served in the army, winning the hearts

of officers and men by his prudence and uprightness, and on the deposition of Michael VI. in 1057 was elevated to the throne. He repelled the Hungarians attacking his N. frontier; and then, resigning the crown (1059) retired to a convent, where he lived two years longer. He was one of the most virtuous and able emperors of the East. There are extant from his pen scholia and other works on Homer.

ISAAC II., ANGELUS, connected through his mother with the Comnenian emperors, became sovereign of the East in 1185, and reigned 10 years. Isaac was a vicious and cowardly prince, and his reign was a period of war and tumult. He was dethroned, blinded, and imprisoned by his brother Alexius in 1195. Eight years later he was restored to the throne, and reigned for a period of six months, when he was again dethroned, and soon after he died in prison.

ISABELLA OF CASTILE, daughter of John, 2d king of Castile; born in 1451. By her marriage, in 1469, with Ferdinand, 5th king of Aragon, the two crowns were united. The subsequent conquest of Granada, and expulsion of the Moors, left Ferdinand and Isabella the first sovereigns of united Spain. Isabella was a princess of remarkable abilities, and rare domestic virtues. It was through her exertions and influence that Columbus obtained the small armament that enabled him to reach the New World. In the old fortress of Simancas, where the archives of Castile are kept, have been found some letters in Isabella's own handwriting, wherein she boasts of establishing and upholding the tribunal of the Holy Inquisition; while other official documents disclose the fact that the estates of the unhappy victims who perished by the flames were wholly devoted to the queen's use. It must be said, in exoneration of the queen, that, in her time, heresy was generally considered the greatest of crimes, and that the burning of heretics was held as legitimate a thing, as is, in our own time, the hanging of a murderer. She died in 1504.

ISABELLA II., Queen of Spain; born in Madrid, in 1830. The Salic law, which had previously been in force in Spain, was repealed by the Cortes, in order that she might inherit the crown. The death of her father, in 1833, advanced Isabella, at the age of three years, to the throne. Her uncle, Don Carlos, who in his own right, and that of his son, regarding the abrogating of the Salic law as a direct injustice and violation of their interests, refused to take the oaths of allegiance, and a large portion of the Spanish people, deeming it beneath their honor as men to be swayed by a woman, supported Don Carlos in his treason, and a civil war at once broke out; which, after raging for nearly seven years, was finally terminated in 1840, by the defeat of the Carlists, and expulsion of their chiefs and leaders. At the age of 13 Isabella was declared of age, and at 16 was married to her cousin Don Francisco de Assisi; the realm being governed, during her long minority, by her mother Dona Christina, and Espartero, Duke of Victory, who were appointed severally to the post of regent. Dethroned by the revolution of September, 1868, Isabella left Spain, accompanied in her flight by the king-consort and her four younger children, and took refuge in France. After 1846, when she was married against her will to a man said to be unfit for the conjugal state, the private character of Isabella was exposed to considerable censure and scandal. She died in 1904.

ISAIAH (ī-zā'yä), one of the greatest of the Hebrew prophets. He was the son of Amos, whom some of the fathers supposed to be the prophet Amos, the names being identical in Greek; in Hebrew, however, they are different, the prophet being Amos, and Isaiah's father Amots. As in the vision recorded in Isaiah vi, the prophet is represented as being in the court which none but the descendants of Aaron might enter, he was perhaps a priest. He was born probably between 783 and 788 B. C. He married a woman to whom, as to him, prophetic gifts were given (Isa. viii: 3). One of his sons was called Shear-jashub = a remnant returns, or a remnant will return (vii: 3); another Maher-shalal-hash-baz = hasten to the spoil, quickly carry off the prey. Isaiah exerted great influence at the court of Jerusalem under Ahaz, and yet more under Hezekiah. He was contemporary with Amos, Hosea, Micah, and perhaps with Joel. Besides his prophecies, he wrote also biographies or histories of Uzziah (II Chron. xxvi: 22), and Hezekiah (xxxii: 32). Tradition says that he was sawn asunder by order of King Manasseh, his tragic fate, it is supposed, being alluded to in Heb. xi: 37.

The Prophecies of Isaiah, the first and most important of the prophetic books. It is headed "The vision of Isaiah, the son of Amoz, which he saw concerning Judah and Jerusalem in the days of Uzziah, Jotham, Ahaz, and Hezekiah, Kings of Judah." If chapter vi is chronologically the earliest of any, and describes his first call to the prophetic

office, his utterances would commence in 758, 757, or 756 B. C. If the prophecies are arranged in the order of time, then chapters i-v would belong to an earlier period. Omitting these writings of uncertain date, the next utterances are in the reign of Ahaz, none apparently belonging to the 16 years of Jotham's reign. He continued at least till the fourth year of King Hezekiah, 712 B. C., a period of 44 to 46 years. This is the minimum span of his prophecies; the maximum is much greater. Viewed as a poetic composition the book of Isaiah exhibits genius of a very high order.

ISAR, or **ISER** (ī'zer), a river of Bavaria, rises in the Tyrol, N. E. of Innsbruck, and flows 220 miles, generally in a N. and N. E. direction, till it falls into the Danube near Deggendorf. Munich and Landshut are on the banks "of Iser, rolling rapidly." Hohenlinden is 20 miles away. Area of its drainage basin, 3,545 square miles.

ISATINE (ī'zä-tēn), a product obtained by suspending finely powdered indigo in three times its weight of boiling water, and adding gradually nitric acid of sp. gr. 1.35 till the blue color has disappeared. On cooling, crude isatine is deposited, and may be purified by dissolving in potash, precipitating with hydrochloric acid, and crystallizing from alcohol. It crystallizes in the form of brilliant yellowish-red prisms, which dissolve readily in boiling water, in alcohol, and in ether. It may aso be produced synthetically by the action of oxidizing agents on amido-oxindol, or by the reduction of orthonitro-phenyl glyoxalic acid in alkaline solution. Isatine does not unite with acids, but rather plays the part of an acid. It dissolves in potassic hydrate, forming a dark violet-colored solution of potassium isatine, which, on addition of argentic nitrate, gives carmine-red crystals of argentine isatine, $C_8H_4NO_2Ag$. It also yields crystalline compounds, with alkaline hydric sulphites. Boiled with concentrated nitric acid, it is converted first into nitrosalicylic acid, and finally into trinitrophenol. When strongly heated, isatine fuses and sublimes in part unchanged.

ISATIS (ī'sā-tis), a genus of plants, order *Brassicaceæ*. *I. tinctoria*, the woad, is an annual plant, native of Europe, occasionally cultivated here for the sake of its leaves, which yield a dye that may be substituted for indigo. It grows about four feet high, with large leaves clasping the stem with their broad bases; flowers yellow, large, in terminal racemes.

ISAURIA (is-ōr'ē-ä), in ancient geography, a district of Asia Minor, occupying the summit and N. slopes of Mount Taurus. The people were stern and savage pirates and robbers. At length their depredations and those of their neighbors, the Cilicians, became so formidable that the Roman proconsul, P. Servilius, chased them into their mountain fastnesses and coerced them into submission in 76 B. C., for which exploit he acquired the surname Isauricus. Nevertheless the Isaurians were not subdued, though Pompey drove them off the sea. They conquered the Cilicians and remained the terror of the neighboring states down to the 4th century. In the reign of the Emperor Gallienus (253–268) there even arose among this savage folk a rival emperor, Trebellianus, who, however, was finally crushed. This same people also gave two emperors to Byzantium, Zeno I. (474–491) and Leo III. (718–741); the descendants of the latter ruled over the empire of the East for three generations. From the 5th century onward the Isaurians gradually disappear from history.

ISCHIA (is'kē-ä), the ancient Ænaria and Pithecusa, an island on the N. side of the entrance to the Bay of Naples, 6 miles from the mainland. Area, 26 square miles; pop. about 30,000. Ischia is a favorite place of summer resort, being noted for the excellence of its warm mineral waters. Its highest point is the volcanic Monte Epomeo, 2,608 feet, the last outbreak of which occurred in 1302. In 1881 Casamicciola was nearly destroyed by two earthquake shocks. On Sept. 28, 1883, the town was utterly overwhelmed, only four or five buildings being left standing, and 4,000 or 5,000 persons lost their lives. The inhabitants grows fruits, wine, and olive oil, and carry on fishing. Chief towns: Ischia, a bishop's seat; Casamicciola, and Forio.

ISCHIUM (is'kē-um), one of the bones in the pelvic arch in vertebrated animals. It forms the posterior and inferior part of the os innominatum, and bounds the obturator foramen in the lower half of its extent.

ISCHL (ish'el), a town of Upper Austria, on the river Traun, amid magnificent Alpine scenery. It is the chief town of the district called the Salzkammergut. The situation of Ischl, and the saline baths established in 1822, attract 4,000 or 5,000 visitors annually. Pop. about 30,000.

ISCHYROMYS (is-ker'ō-mus), the typical genus of the family *Ischyromyidæ*. It is known only by a North American fossil rodent, *I. typus*, described by

Leidy from remains found by Hayden in Miocene deposits in the "Bad Lands" of Wyoming. It resembles the musk rat, but has closer affinity to the squirrels, and certain resemblances to the beavers.

ISÈRE (ē-zār´), a department in the S. E. of France, round which on the N. and W. flows the river Rhone. It was formed out of the ancient province of Dauphiné; area, 3,200 square miles. Mont du Midi, on the S. E. border, rises to 13,088 feet. The chief river, besides the Rhone, is its left-hand tributary, the Isère, which, rising in the Alps at an altitude of 7,540 feet, flows S. W. to join the Rhone above Valence, after a total course of 180 miles (102 navigable). The products include wheat, wine, stone fruits, medicinal plants, and hemp. Cheese is made; and silkworms are reared. The department is rich in mineral products; iron, coal, and turf are worked, and to a less extent marble, slates, and gypsum. The industrial activity is considerable, particularly in the manufacture of iron and steel goods, gloves, silk stuffs, cloth, linen, paper, straw hats, liqueur, etc. Pop. about 560,000.

ISERLOHN (ī´zer-lōn), a manufacturing town of Prussian Westphalia. The calamine mines are celebrated. In the neighborhood is the Dechen stalactite cave, discovered in 1868. Pop. about 30,000.

ISHBOSHETH (ish´bō-sheth), a son and successor of Saul. Abner, Saul's kinsman and general, so managed that Ishbosheth was acknowledged king at Mahanaim by the greatest part of Israel, while David reigned at Hebron over Judah. Involved in a long and unsuccessful war against David, and abandoned by Abner, he was assassinated.

ISHIM (ē-shēm), a town in Siberia, important as a trade center. It is the oldest of Siberian towns. A river and a territory adjacent likewise bear the name.

ISHMAEL (ish´mā-el), a son of Abraham, by Hagar, who on the birth of Isaac, son of Sarah, was sent forth from his father's house with his mother. After dwelling in the desert for a long time, he became a great hunter and mighty warrior. The Arabs regarded Ishmael as the father of their nation, and the author of their language. He lived 137 years.

ISHMAELITES, ISMAELITES, or **ISMAELIANS,** a Mohammedan sect originating in the 1st century of the Hegira, and deriving its name from Ishmael or Ismael, one of Ali's descendants. From the 8th to the 12th century they were powerful in the East, and distributed themselves over Irak, Syria, Persia, and Egypt.

ISHPEMING, a city in Marquette co., Mich., on the Chicago and Northwestern, and the Duluth, South Shore, and Atlantic and the Lake Superior and Ishpeming railroads; 15 miles W. of Marquette. It is the mining trade center for the great Marquette iron range, one of the most noted in the Lake Superior region, and the mining district of Ishpeming contains many of the most productive mines in the State. In the district also are valuable veins of gold, silver, and marble. The general offices of the Lake Superior and Ishpeming railroad are located here, and besides the mines and iron works there are manufactories of boilers, wagons and sleighs, machinery, and worked lumber. The city has trolley connection with Negaunee, a National bank, public library, water supply from Lake Superior, several weekly periodicals. Pop. (1910) 12,448; (1920) 10,500.

ISINGLASS, a very pure form of gelatine, prepared from certain parts of the entrails of several fish. The best is derived from the sturgeon, and is almost exclusively imported from Russia, twisted up in rolls or formed into cakes, which are afterward torn into shreds or cut into fine shavings. Good isinglass should be free from smell and taste, and perfectly soluble in boiling water.

ISIS (ī´sis), in Egyptian mythology, the wife of Osiris and mother of Horus. She is, however, variously described, and invested with many different characters. By the Greeks she was generally identified with Demeter (Ceres). Among the higher and more philosophical theologians she was made the symbol of Pantheistic divinity; see especially the remarkable passage at the end of the "Golden Ass" of Apuleius. By the people she was worshiped as the goddess of fecundity, and in her honor an annual festival was instituted which lasted seven days. The cow was sacred to her. She was represented variously, though most usually as a woman with the horns of a cow, sometimes suckling Horus, and sometimes with the lotus on her head and the sistrum in her hand. Her priests were bound to observe perpetual chastity; but when her worship passed into foreign countries, her rites became merely a cloak for sacerdotal licentiousness, which at last reached such a pitch that they were prohibited at Rome.

The worship of Isis, however, was repeatedly revived, and furnished a theme for the indignant pen of Juvenal.

ISIS, a genus of corals, the typical one of the sub-family *Isidinæ*. The sclerobasis consists of alternate calcareous and horny segments, the former giving rise to branches. *I. hippuris* is from Amboyna, *I. polyantha* from the American seas, and *I. coralloides* from those of India.

ISLAM (is-läm′ or is′lam), the proper name of the Mohammedan religion; designating complete and entire submission of body and soul to God, His will and His service, as well as to all those articles of faith, commands, and ordinances revealed to and ordained by Mohammed the prophet.

ISLAND, a tract of land encompassed with water, whether of the sea, a river, or a lake—in contradistinction to continent or terra firma. The detached portions of land separated from each other, and from the larger masses or continents, by water spaces more or less wide and deep, are of two very distinct kinds. Some are elongated and generally parallel to continents, others are detached, rounded, or in groups and systems in open ocean. The former are called continental, and the later pelagic. Of the continental islands of Europe, the British Islands, the islands between Italy and Spain, and those of the Grecian Archipelago, are the most important.

ISLAND NO. 10, an island in the Mississippi river, at the W. extremity of Kentucky, on the border of Tennessee, about 40 miles below Columbus. It was captured by the Union forces under General Pope in April, 1862.

ISLAY (ī′lä), an island of Argyllshire, Scotland. Deeply indented on the S. by Loch Andail (12 by 8 miles), Islay has a maximum length and breadth of 25½ and 19 miles, and an area of 246 square miles. It contains several small freshwater lakes, and attains a height of 1,444 feet.

ISLE OF FRANCE. See MAURITIUS.

ISLE OF MAN, in the Irish Channel, equi-distant from England, Scotland, and Ireland. Area, 220 square miles; population about 50,000. The principal towns are Douglas, Castletown, Ramsey, and Peel. Castletown is the ancient capital, but Douglas (pop. about 20,000) is the chief town and the seat of government. Physical aspect mountainous, well watered, and exhibiting lovely scenery. There are peculiar breeds of ponies, cattle, cats, etc. Government is "home rule" under a lieutenant-governor, who, with council and House of Keys of 24 members, makes up the Tynwald Court. Acts, after assent of the crown, must be proclaimed on Tynwald Hill. Industries are farming, fishing, mining of lead, copper, iron, zinc, and reception of tourists. The Manx people are a distinct Celtic nationality. Their language and old customs are rapidly disappearing.

ISLE OF PINES (Isla de Pinos). See PINES, ISLE OF.

ISLE OF WIGHT, with the exception of the Isle of Man the largest island in the English seas, lies off the S. coast of the kingdom, separated from Hampshire by the Solent, a channel mainly ranging between 2 and 4 miles in breadth. Its extreme length, E. to W. from the Foreland to the Needles, is about 23 miles, and its extreme breadth, N. to S., Cowes to St. Catharine's Point, is about 13 miles. The late Queen Victoria had a residence on the Isle of Wight. The area is calculated at 145 square miles, but was formerly estimated at much more.

ISLE PERROT (ēl-per-ō′), a Canadian island in the St. Lawrence river above Montreal Island, and between Lake of Two Mountains and Lake St. Louis.

ISLE ROYALE (-rwy-äl′ or roī′al), an island belonging to Michigan, in Lake Superior, 45 miles long, 9 miles wide; area, 229 square miles. The shores are generally rocky and broken. There are extensive veins of native copper, many of which have been worked in prehistoric times, as they are still.

ISLES, LORD OF THE, a title borne by a race of Scotch chiefs.

ISMAELITES, or **ISMAELIANS.** See ISHMAELITES.

ISMAIL (iz′mīl), a town and river port in Russian Bessarabia; on the N. bank of the Kilia branch of the Danube, 48 miles from its mouth. Formerly a Turkish fortress, it was taken and destroyed by Suwaroff in December, 1790; came into possession of Russia in 1812; was assigned to Moldavia by the treaty of Paris, 1856, its fortifications being razed; and was transferred to Russia again by the Berlin Congress of 1878. It has an active trade in corn, wool, tallow, and hides. Pop. about 37,000.

ISMAILIA (iz-māl′yä or iz-mä-ēl′yä), a small town on Lake Timsah, through which the Suez Canal passes. It stands on the railway from Cairo to Suez and on the Sweet Water Canal.

ISMAIL PASHA (iz'māl or iz-mä-ēl), a Khedive of Egypt, son of Ibrahim Pasha and grandson of Mehemet Ali; born in Cairo, in 1830. He was made commandant of the army in 1862, and succeeded Said Pasha as viceroy in 1863. In 1867 he acquired from the Porte the title of Khedive. His lavish expenditures not only greatly encumbered his own estate, but embarrassed all the people of Egypt. He took an active interest in the building of the Suez Canal, but under his mismanagement the country became so involved in debt that he was forced to abdicate. This he did, his son taking his place. Not being allowed by the Sultan to go to Constantinople, he made his home at Naples and various other places for many years, but finally died in Constantinople, March 2, 1895.

ISNIK, a town of Asia Minor in which, in 325, the first œcumenical council was held.

ISOBARIC LINES (is-ō-bar'ik), lines drawn on a map or globe through all places where the barometer is at the same height at a certain time. Telegraphic communication enables these lines to be drawn with some immediateness.

ISOCHROMATIC LINES, in optics, colored rings appearing when a pencil of polarized light is transmitted along the axis of a crystal, as of mica or niter, and, after passing through a plate of tourmaline, finally reaches the eye.

ISOCHRONISM (is-ōk'ron-ism), a property appertaining to all systems in equilibrium, by which, when slightly disturbed more or less, the oscillations resulting are all performed in the same time, or so nearly in the same time that any retardation or acceleration is imperceptible. When a pendulum, for instance, is allowed to vibrate till it rests, it will be found that no perceptible difference exists between the vibrations of longer or shorter extent, the same number of vibrations being made in the same length of time. Again, in the sound produced by a musical string, the finest ear cannot detect any difference in the pitch of a note made by a smart blow on the pianoforte key and a gentle touch; yet a very small difference in the number of vibrations per second would be perceptible to the ear.

ISOCRATES (ī-sok'ra-tēs), a Greek orator and rhetorician; born in Athens in 436 B. C. He was carefully educated, Socrates having been of the number of his preceptors; and at an early age was celebrated for the facility with which he used his native tongue, though the weakness of his voice precluded any hope he may once have entertained of distinction in public life. He therefore opened a school of oratory, the fame of which soon filled all Greece, in consequence of the exceptional attainments of its graduates. The ages have spared to us 21 of his compositions, rhetorical and espistolary. He is best represented by the discourses known as the "Areopagiticus" and the "Panegyricus."

ISODYNAMIC, ISOCLINIC, and **ISOGONIC LINES**, lines of equal force, equal inclination, and equal declination, are three systems of lines which being laid down on maps represent the magnetism of the globe as exhibited at the earth's surface in three classes of phenomena, the varying intensity of the force, the varying dip or inclination of the needle, and its varying declination from the true meridian.

ISOGEOTHERMIC LINES, a term introduced by Kupffer for lines drawn on a globe or map across those places in which the mean temperature of the soil is the same.

ISOMERISM (ī-sōm'er-ism), in chemistry, a term applied to those bodies which are composed of the same elements, in the same proportions, but which differ either in their physical characteristics, or in their chemical properties. They may be divided into three distinct classes: isomeric, metameric, and polymeric bodies.

Isomeric bodies or isomerides are those which show analogous decompositions and changes, when heated, or when treated with reagents, but differ in physical properties.

Metameric bodies, or metamerides, are those which exhibit dissimilar transformations when heated, or when acted on by reagents.

Polymeric bodies, or polymerides, contain the same elements in the same proportions, but have different molecular weights.

ISOMORPHISM (ī-sō-mor'fizm), a general law, discovered in 1819 by Professor Mitscherlich, of Berlin, by which the variation of minerals is governed. It is that the ingredients of any single species of mineral are not absolutely fixed as to their kind and quality, but one ingredient may be replaced by an equivalent portion of some analogous ingredient. Thus in augite the lime may be in part replaced by portions of peroxide of iron, or of manganese, while the form of the crystal and the angle of the

cleavage plane remain the same. These substitutions are, however, confined within certain limits.

ISONANDRA, in botany, a genus of *Sapotaceæ*. *Isonandria obovata*, an evergreen tree, growing in Tenasserim, yields a kind of gutta-percha, and *I. gutta*, the gutta-percha itself.

ISONZO, BATTLES OF. The river Isonzo rises in the Austrian Alps, near Luknia Pass, flows southward, along a devious course, for less than a hundred miles, then empties into the Gulf of Trieste, at the head of the Adriatic. The river runs almost parallel with the old frontier between Italy and Austria, in what was, before the war, Austrian territory. Above Salsana the river runs through a deep ravine; then, below that, comes a level stretch in front of Gorizia, after which the hills rise and sweep down to the seacoast.

It was along this lower reach of the river, for a distance of about twenty miles, that the heaviest fighting of the Austrian-Italian front occurred, after Italy entered into the war, in 1915.

Hostilities having begun on May 24, 1915, General Cadorna deployed the whole of the Italian Third Army along the right bank of the Isonzo, between Tolmino and Monfalcone, and carried out a vigorous offensive, to gain a footing on the left bank, and so clear the way to Trieste. On May 26 Italian troops crossed the river at five points, Caporetto, Pluva, Castelnuovo, Gradisca, and Monfalcone, in spite of the extensive defense works built by the Austrians. The city of Gorizia, however, was too heavily fortified to be captured, and was accordingly besieged.

During November and December, 1915, the Italians made a series of most desperate attempts to storm the bridgehead at Gorizia and establish themselves on the Doberdo Plateau, rising from 350 to 650 feet above the river. Against Monte San Michele the Italian concentrated 1,500 guns. But the Austrian defenses proved too strong, and this first major battle on the Isonzo proved a victory for the Austrians.

During the following winter (1915–1916) the Italians were satisfied to mark time, but during the Spring of 1916 several engagements took place with very little advantage to either side. Most of the Italian attacks were directed against Gorizia, or its commanding positions.

On Aug. 4, 1916, the Italians again became active. After three days of continuous infantry attacks, the Austrians began to give way, and enough advance was made by the Italians to enable them to bring their big guns into such positions that they could open a heavy fire on the city itself and its defensive works. On Aug. 9 the Italians forced their way across the bridge at Gorizia and occupied the city. The city was taken, but the Austrians remained entrenched in the hills to the eastward, whence they could not be dislodged, and now it was the Austrian guns that bombarded the city.

On May 12, 1917, another offensive was begun by the Italians, taking in the whole Austrian-Italian front, as well as the Isonzo. For days violent artillery firing continued, during which Gorizia, was almost pounded into ruins by the Austrian guns. For ten days intermittent attacks and counter-attacks were made by both sides, the fighting being sometimes hand to hand.

After an interval of comparative quiet, lasting a week, the battle broke out again with renewed fury, but by the end of May the Italians had not gained much ground, and the fighting gradually died down to the usual trench warfare. The Italians still held Gorizia, but this was an advantage more picturesque than real, for the Austrians held heights surrounding and commanding the city.

At this time, in the summer of 1917, the front began some miles S. W. of Tolmino, run for a little more than five miles along the W. bank of the Isonzo, crossed it W. of the village of Decla, ran along the E. bank for another five miles, then, opposite a bend in the river, turned south for still another five miles to San Marco, running at a distance of about a mile and a half E. of Gorizia, and then twisted south for some fifty miles, crossing in its course the valley of the Vipacco river, down to the Gulf of Trieste, where it ended about two miles S. E. of Monfalcone.

On Aug. 19, 1917, the Italians began another strong offensive. During the following week Monte San Gabriele was the center of the battle, changing hands again and again. Finally, on Sept. 11, the Italians definitely gained possession, but were obliged to hold this important point against severe pressure from the Austrians, until, near the middle of the month, a period of comparative calm succeeded. On the whole, the Italians had made considerable gains along their whole front, as well as on the Isonzo, but the heaviest fighting had been here.

From now on followed a period comparatively uneventful, until Oct. 20, 1917, when intense activity again began, but this time it was not the Italians who

initiated the offensive. The Austrians, reinforced by troops from the Russian front, and by large contingents of Germans, began a determined effort to drive the Italians back into Italy. The battle on the Isonzo front was really only one phase of the fighting along the whole Austrian-Italian line.

For several days the Italians succeeded in holding the onrushes of the Teutons in check, but as reinforcements continued streaming in, the Italian line began gradually to sag, with breaks appearing here and there.

On Oct. 28, 1917, Gorizia again fell into the hands of the Austrians. Violent storms and heavy rains broke over the Isonzo district, but without any noticeable decrease in the energy of the Austrian-German attacks. Thousands of Italians were taken prisoners and much war material had to be abandoned.

On Oct. 29, 1917, Udine was taken by the Teutons, Cividale had been taken the day before. Both towns were of great strategic importance, Udine being a railroad junction.

The Austrian drive continued, with further disaster to the Italians. They retreated, until they made their last and successful stand along the Piave (*q. v.*), but with the loss of Cividale and Udine the battles on the Isonzo came to an end, to be continued in the battles of the Piave. The Isonzo was now, for the time being, almost entirely in the hands of the Austrians.

ISOPERIMETRICAL, in geometry, a term applied to figures which have equal circumferences or perimeters.

ISOPODA (ī-sop'ō-dä), in zoölogy, an order of Crustaceans, division Thoracipoda, legion Edriophthalmia. The body is composed of seven segments, as a rule nearly equal in size. The legs, which are seven pairs, are almost of the same length. They are fitted for walking, swimming, or adhering as parasites. The posterior (abdominal) appendages are converted into leaf-like respiratory apparatus. The heart is near the tail. The common wood louse is a well-known example of *Isopoda*.

ISOTHERMAL LINES, lines on a globe or map passing over places in which the mean general temperature is the same. Humboldt first generalized the observations and collected the facts bearing on isothermal lines.

ISOTROPISM, physical homogeneity or amorphism; identity of elastic forces of propagation of vibration (light, heat, sound), or identity of susceptibility to magnetization, in all directions.

ISPAHAN (is-pa-han'), a city of Persia, and formerly the capital of that empire. It is situated in the province Irak-Ajemi, of which it is the capital. It stands in the midst of an extensive plain, abundantly watered by the Zenderood, a river about 600 feet broad; and is surrounded by groves, avenues, and spreading orchards. Within its limits the city comprises one vast succession of superb mosques, immense bazaars, marble palaces, canals, fountains, and gardens. The manufacture of all kinds of woven fabrics, from the most costly gold brocade of figured velvet to the most ordinary calico or coarse cotton, is pursued on an extensive scale; many hands are also employed in making trinkets and jewelry, paper, papier-mâché goods, arms, steel sword blades, glass and earthenware. Ispahan is the chief commercial emporium of Persia, and on the great line of communication between India, Cabul, and China on the E. and Turkey, Egypt, and the Mediterranean on the W. The inhabitants are considered the best artificers in Persia, and education is very general. Ispahan, under the caliphs of Bagdad, became the capital of Irak, and under Shah Abbas the metropolis of Persia. In 1722 Ispahan was reduced by the Afghans, and in 1727 was retaken by Nadir Shah, who, however, took no steps to restore it to its ancient glory. Within the last 100 years the capital has been transferred to Teheran, and Ispahan has gradually fallen into a state of decay from which even its commercial importance has not been able to redeem it. Pop. (1918) 80,000.

ISRAEL, the name divinely given to Jacob during the scene at Peniel or Penuel as a memorial that, as a prince, he had power with God and with men and had prevailed (Gen. xxxii: 28). Also the Jewish people; a contraction for Children of Israel or House of Israel (Hosea xi: 1). See JEWS. Also a religious sect which appeared for the first time in England in 1883.

ISRAELITES. See JEWS.

ISRÄELS, JOSEF, a Dutch artist; born in Groningen in 1824. He studied at Amsterdam under Pieneman and Kruseman, and in Paris under Picot and Henri Scheffer. In 1855 his "William, Prince of Orange, opposing the Decree of the King of Spain" attracted attention in the Exposition Universelle. In 1867 his celebrated "Interior of the Orphan Asylum at Katwijk" gained for him a third-class medal and the ribbon of the Legion of Honor; and eight years

later he was awarded the cross and a first-class medal. Later he resided at The Hague. Among his chief pictures may be named "The Sewing-School at Katwijk" (1881), "Silent Company" (1882), "Fine Weather" (1883), and "The Struggle for Life" (1883). He is also favorably known as an etcher by "Old Mary," "The Cradle," "The Mother," "The Fisherman," etc. He died in 1911.

ISSIK-KUL (iz-ik-ul′), a lake in Central Asia, in the Russian province of Semiryetchensk, situated, at an elevation of 5,000 feet above sea level, between the Terskei Ala-tau range on the S. and the Kangei Ala-tau on the N. It measures 112 miles long, 38 miles broad, and covers an area of 1,980 square miles. Its water is very salty, but full of fish.

ISSUE, in law, the point of fact in dispute which is submitted to a jury.

ISSUS (is′us), anciently, a seaport on a gulf of the same name in Cilicia, Asia Minor, celebrated for the victory which Alexander the Great obtained here over Darius (333 B. C.), by which the camp and treasure and family of Darius fell into his hands.

ISSY (is-ē′), a village in the French department of Seine, half a mile S. W. from Paris. There are manufactures of wax, cloth, chemicals, etc. Here on July 3, 1815, Blücher defeated Davoût. In 1870–1871, during the siege of Paris by the Germans, the fort of Issy suffered severely from the artillery fire. It now forms part of the S. W. defenses of Paris. Pop. about 20,000.

ISTAR (is-tär′), the ancient Babylonian god of war and destruction.

ISTER. See DANUBE.

ISTHMIAN GAMES, athletic contests of ancient Greece, celebrated in April and May of the first and third years of each Olympiad. The contests included all varieties of athletic sports, as wrestling, running, boxing, etc., and competitions in music and poetry. The victors were crowned with garlands of pine leaves, these being the only prize.

ISTHMUS, in geography, a narrow neck of land joining two larger portions, as the Isthmus of Suez and the Isthmus of Panama. The name was often employed by the ancients without any addition to designate the Isthmus of Corinth, joining the Peloponnesus to continental Hellas. Here were celebrated the Isthmian games.

ISTRIA (is′trē-ä), an Austrian margraviate until 1918—now a part of Italy, forming a peninsula in the N. E. corner of the Adriatic Sea, between the Gulf of Trieste and the Gulf of Fiume or Quarnero. Though a mountainous land, often swept by the sirocco and bora winds, it yields excellent olive oil and wine. Area, with the adjacent islands, 1,812 square miles; pop. about 400,000. Capital, Rovigno. After the collapse of Austria in the World War in 1918, Allied forces occupied Pola, the naval base on the peninsula.

ISVOLSKY, ALEXANDER PETROVITCH, a Russian statesman; born in Moscow, 1856. Having finished his education, at the age of twenty-two, he at once entered the diplomatic service and was sent to Rome, with the result that a Russian legation was established in the Vatican. Was appointed ambassador to Japan, in 1900, and to Denmark in 1902. Became Foreign Minister in 1906, and in 1910 went to France as ambassador, where he remained till after the Revolution of 1917, when he resigned.

ITACOLUMITE, a schistose quartzite, containing scales of mica, talc, and chlorite, which are often so arranged as to give a certain flexibility to the rock (flexible sandstone). In Brazil and the S. E. States of North America itacolumite is the matrix in which diamonds are found.

ITALIAN ARCHITECTURE, a style founded on the old Roman orders, and the characteristic features of the ancient buildings of Rome, which may be considered to have been initiated in Italy by Brunelleschi and the Italian architects of the day in the 15th century, and brought to perfection by Palladio and other architects of eminence in the 16th century, who flourished in the times of the Medici. In buildings designed both for public and private purposes it is chiefly characterized by the use of the Roman orders of architecture, rather as decorative than constructive features. These are mainly obtained by the use of pilasters placed along the façade of each story of a building at intervals, each row of pilasters being surmounted by an entablature running along the entire length of the edifice, like a string course. The windows and doors were decorated with pilasters or columns, rising from a massive and projecting sill and surmounted by circular, pointed, or broken pediments, on which recumbent figures were frequently placed. The roof was partially hidden by a balustrade which crowned the edifice and rose above the attic story, and the pedestals of the balustrade generally supported statues or sculptured vases.

NAPLES
AND VICINITY
SCALE OF MILES
0 1 2 3 4 5
BAY OF NAPLES
Bocca Grande
Naples
Castellammare
Sorrento
Capri
Ischia
Procida
Vesuvius
VENICE
AND VICINITY
SCALE OF MILES
0 1 2 3 4
Venice
Malamocco
Pelestrina
Chioggia
Brondolo
Lido Har.
Ft.S.Nicolo
Ft.Alberoni
Malamocco Har.
Ft.S.Pietro
Ft.Caroman
Ft.S Felice
GULF OF VENICE
AUSTRIA
SWITZERLAND
FRANCE
LOMBARDY
PIEDMONT
VENETIA
TRENTINO
EMILIA
TUSCANY
MARCHES
UMBRIA
ABRUZZI
ROME AND MOLASE
CORSICA
SARDINIA
LIGURIAN SEA
GULF OF GENOA
ADRIATIC SEA
DALMATIA
Milan
Turin
Genoa
Venice
Trieste
Fiume
Ancona
Florence
Rome
Naples
Leghorn
Pisa
Lucca
Parma
Modena
Reggio
Bologna
Ferrara
Ravenna
Forli
Rimini
Pesaro
Urbino
Perugia
Spoleto
Aquila
Chieti
Pescara
Foggia
Bari
Brindisi
Otranto
Gallipoli
Taranto
Cagliari
Sassari
Bastia
Ajaccio
Bonifacio
Corsica
Sardinia
Elba
Capraja I.
Gorgona I.
Meloria
Giglio I.
Monte Cristo I.
Formica
Pianosa I.
Giannutri I.
Lissa I.
Curzola I.
Lagosta I.
Meleda I.
Pelagosa I.
Tremiti Is
Grossa I.
Incoronata
Zurt I.
Lesina
Brazza
Premuda
Melada
Lunga
Cherso I.
Arbe
Veglia
Pola
Cattaro
Ragusa
Durazzo
Valona
Otranto
Strait of
Gulf of Trieste
Gulf of Venice
Gulf of Genoa
Gulf of Spezzia
Gulf of Salerno
Gulf of Policastro
Gulf of Taranto
Gulf of Manfredonia
Gulf of Squillace
Gulf of Ajaccio
Gulf of Valinco
Gulf of Porto
Gulf of Sagone
Mouths of the Po R.
Po di Primaro
Comacchio
Po R.
Adige R.
Brenta R.
Piave R.
Tagliamento R.
Isonzo R.
Arno R.
Tiber R.
Volturno R.
Garigliano R.
Sangro R.
Biferno R.
Trigno R.
Pescara R.
Tronto R.
Potenza R.
Metauro R.
Savio R.
Reno R.
Ticino R.
Adda R.
Oglio R.
Mincio R.
Taro R.
Magra R.
Ombrone R.
Tavignano R.
Gotthard
Simplon
Mont Cenis
Brenner
Splugen
Lukmanier
Lepontine Alps
Rhaetian Alps
Carnic Alps
Julian Alps
Pennine Alps
Cottian Alps
Maritime Alps
Apennines
Monte Rosa
Mont Blanc
Mont Cenis
Mont Viso
Monte Viso
Monte Cenis
Monte Rosa
Monte Generoso
Monte Baldo
Monte Grappa
Monte Pasubio
Monte Cristallo
Monte Tofana
Monte Marmolata
Monte Adamello
Monte Ortler
Monte Cevedale
Monte Bernina
Monte Disgrazia
Monte Legnone
Monte Resegone
Monte Grigna
Monte Generoso
Monte Rosa
Monte Viso
Monte Cenis
Monte Rosa
Monte Generoso
Monte Baldo
Monte Grappa
Monte Pasubio
Monte Cristallo
Monte Tofana
Monte Marmolata
Monte Adamello
Monte Ortler
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Monte Tofana
Monte Marmolata
Monte Adamello
Monte Ortler
Monte Cevedale
Monte Bernina
Monte Disgrazia
Monte Legnone
Monte Resegone
Monte Grigna

ITALY
SCALE OF STATUTE MILES
0 10 20 40 60 80 100 120
SCALE OF KILOMETERS
0 20 40 60 80 100 120 140 160 180 200
Important towns are shown in heavy face type
Railroads
Canals
ROME & VICINITY
SCALE OF MILES
TYRRHENIAN SEA
MEDITERRANEAN SEA
IONIAN SEA
Strait of Bonifacio
Gulf of Terranova
Gulf of Orosei
Gulf of Oristano
Bay of Naples
Gulf of Salerno
Gulf of Taranto
Gulf of Squillace
Gulf of Catania
Gulf of Palermo
Gulf of Castellamare
Gulf of Trapani
SARDINIA
CAMPANIA
APULIA
BASILICATA
CALABRIA
SICILY
Naples
Salerno
Foggia
Bari
Brindisi
Taranto
Gallipoli
Cagliari
Sassari
Palermo
Messina
Catania
Syracuse
Trapani
Marsala
Porto Empedocle
Augusta
Pantelleria
Lampedusa I.
Malta
Gozzo
Comino
Valetta
Filfola I.
Lipari Islands
Stromboli I.
Panaria I.
Filicudi I.
Salina I.
Lipari I.
Alicudi I.
Vulcano I.
Ustica I.
Aegades Is.
Favignana I.
Maritimo I.
Pontine Is.
Ventoline I.
Palmarola I.
Zannone I.
Ischia I.
Capri I.
Procida I.
Ponza I.
Ventotene I.
Tavolara I.
Asinara I.
Maddalena I.
Caprera I.
Mal di Ventre I.
Kuriat Is.
Cani I.
Pelagosa I.
Tremiti Is.
Pianosa I.
Elba I.
Capraia I.
Gorgona I.
Monte Cristo I.
Giglio I.
Giannutri I.
Ponza I.
Ventotene I.
Ischia I.
Capri I.
Procida I.
Palmarola I.
Zannone I.
Pontine Is.
Ventoline

ITALIAN SOMALILAND. See SOMALILAND.

ITALY, a kingdom in Southern Europe, consisting in the main of a large peninsula, having a singular resemblance to a boot in shape, stretching S. into the Mediterranean, but also including a considerable portion of the mainland and the islands of Sicily, Sardinia, Elba, Ischia, Lipari Islands, etc. It is bounded on the N. and N. W. by the Alps, which separate it from Austria, Switzerland, and France, and on the N. E. by Austria; elsewhere it is washed by the Mediterranean, or by the Adriatic, an arm of the former. The area, exclusive of the Trentino, is about 114,000 square miles, and the pop. (1918) 36,740,000. For administrative purposes it is divided into departments. By the treaty of St. Germain with Austria, Italy was awarded the Trentino and several islands in the Mediterranean.

From 1861, when the Kingdom of Italy was constituted, till 1865, Turin was the capital, Florence was then selected, and in 1871 Rome. The largest town is Naples, pop. 697,917. Next in order—Rome 590,960, Turin 451,994, Palermo 345,891. The dependencies comprise the little republic of San Marino in Italy, Italian Somaliland and Erithrea in Africa, and a few islands. The islands of Sicily and Sardinia are not dependencies but integral parts of the kingdom. The portion of Italy in the partition of Africa was largely lost to her in 1898 through the operations of Menelik of Abyssinia.

Physical Features.—Among the principal physical features of Italy are the Alps on its N. frontiers, and the chain of the Apennines, which run down the middle of the peninsula through its whole length to the Straits of Messina, while numerous branches are thrown off laterally and form an endless succession of wooded hills, olive-clad slopes, and fertile valleys. In the N., inclosed between the ranges of the Alps and Apennines, is a vast and fertile plain intersected by the Po and its tributaries. Two active volcanoes belong to the kingdom, Vesuvius in south Italy and Etna in Sicily. The only river of any magnitude is the Po, which has a length of about 450 miles before it enters the Adriatic. It is fed by streams both from the Alps and the Apennines. There are a number of lakes, of which the most important are Lakes Maggiore, Lugano, Como, and Garda in the Alpine region; Lakes Trasimeno, Bolsena, and Albano in the Apennine region. Italy is rich in useful minerals, but the scarcity of coal prevents the full development of mining industry. Sulphur, salt, iron, and marble are the chief, though small quantities of lead, copper, zinc, silver, and borax are also obtained.

Mineral Production.—The mineral production is chiefly developed in Sicily, Tuscany, Sardinia, Lombardy, and Piedmont. The production of the chief minerals in 1918 was as follows: mineral fuel, 2,171,397 metric tons; iron, 693,872 metric tons; sulphur ore, 253,390 metric tons; copper, 82,302 metric tons; asphaltic substances, 22,309 metric tons. The total value of the mineral products in 1918 was 369,753,447 lire. There were employed in the mines 52,962 persons.

Climate.—In the S. of Italy the climate resembles that of Africa, being dry and burning and subject to the sirocco. In the N. regions, the neighborhood of the Alps and the abundance of water courses serve to maintain a pleasant temperature. Yet this region is at times extremely cold, especially in the interior of the great plains. In general the climate of Italy is healthy, except marshy districts such as the rice plantations of Lombardy, the Tuscan Maremma, the Campagna of Rome, and the Pontine Marshes, which give rise to exhalations engendering fevers. The Riviera or coast of the Gulf of Genoa is a favorite winter resort from more N. regions.

Vegetable Products, Agriculture.—The natural productions of the soil of Italy are as various as its climate. In the Alpine regions all plants belonging to temperate climates flourish, while the S. regions possess almost a tropical flora. Agriculture forms the chief support of the population, and the land, where not mountainous, is generally productive, though the system of culture adopted is in most parts defective, and large areas remain untilled. The best cultivation, aided by an excellent system of irrigation, is found in Lombardy, Venetia, Piedmont, Tuscany, and the parts of Emilia adjoining the Po. Most kinds of cereals, including rice and maize, are cultivated, and the wheat in particular is of fine quality, but is not sufficient for the home consumption. Hemp, madder, flax, tobacco, hops, saffron, and, in the extreme S., cotton and sugarcane are cultivated. Fruit is the object of attention everywhere; and in the cultivation of the olive in particular Italy surpasses all other European states. The fruits include oranges and lemons in the warm regions of the S., besides figs, peaches, apricots and almonds. There is a very large production of wine, but only a few of the wines have any reputation in other countries. The rearing of live stock is

an important industry. The cheese of Italy is famous, especially the Gorgonzola and the Parmesan. The total area under cultivation in 1919 was about 66,000,000 acres. The production of the principal crops in hundredweights, was as follows: wheat, 92,296,000; oats, 10,080,000; maize, 43,498,000; potatoes, 27,726,000; sugar-beet root, 28,000,000. Other important products were rice, beans, rye and barley.

Manufactures.—The most important are the silk manufactures, Italy as regards the production of raw silk being in advance of all the other countries of Europe. Lombardy, Piedmont, and Venetia are the great centers for its preparation. Weaving is less developed. The cotton manufactures are also centered in Upper Italy, chiefly in Lombardy, and have much increased of late. Woolen manufactures are also chiefly carried on in Upper Italy. In the iron industry the department of Lombardy stands at the head; more particularly the provinces of Brescia, Como, and Milan. Tanning, the manufacture of linen, of paper, gold and silver wares, articles in bronze, musical instruments, the making of gloves, boots and shoes, felt and silk hats, are also considerable industries. The manufacture of tobacco is a state monopoly. Of special repute are the cameos and mosaics of Rome, Naples, and Florence; the filigree and coral work of Genoa; the plaited straw and the earthenware manufactures of Italy generally. There are no trustworthy statistics later than 1911. Manufacturing was greatly disturbed by the World War, and by conditions which followed it. The economic situation resulted in frequent strikes, and a movement gained impetus among workers in the metal working trades to gain control of the enterprises. The movement became so strong that the Government was obliged to pass measures providing for the practical ownership of many of the manufacturing plants by the men employed in them. In 1911 there were 135,461 manufacturing establishments, employing 640,856 workers. The number of unemployed in 1920 was very considerable.

Constitution and Government.—The constitution of the Kingdom of Italy is a limited monarchy, based upon the Fundamental Statute granted by King Charles Albert to his Sardinian subjects March 4, 1848. The king, who is hereditary, exercises the power of legislation only in conjunction with a national Parliament consisting of two chambers. The first chamber is called the senate, and is composed of the princes of the blood and an indefinite number of members appointed for life by the king. The second chamber is called the chamber of deputies, and consists of 508 members, who are elected by a majority of all the citizens above 21 years of age who are in the enjoyment of civil and political rights. In 1918 suffrage was made universal for persons 21 years of age, and for men under 21 who had fought in the World War. The principle of proportional representation was enacted into law in 1919. Each province has the right of independent administration, and the executive power is intrusted to a provincial council. In each province the power of the state is represented by a prefect, who is supported by a council. The executive power of the state is exercised by the king through responsible ministers.

Commerce.—The exports and imports showed quick increase following the conclusion of peace. The imports in 1919 amounted to £660,666,054, and the exports to £207,044,952. These figures may be compared with those of 1914, which for imports were £116,933,902, and for exports £88,416,167. The chief imports were wheat, coal and coke, raw cotton, wrought iron, and steel. The principal exports were raw silk, cotton manufactures, silk manufactures, spun cotton yarn, etc. The chief volume of trade was done with the United States. In 1920 the exports from Italy to the United States amounted to $90,420,177, and the imports from the United States amounted to $398,065,795. The imports show a marked decrease from 1918–1919, while the exports greatly increased.

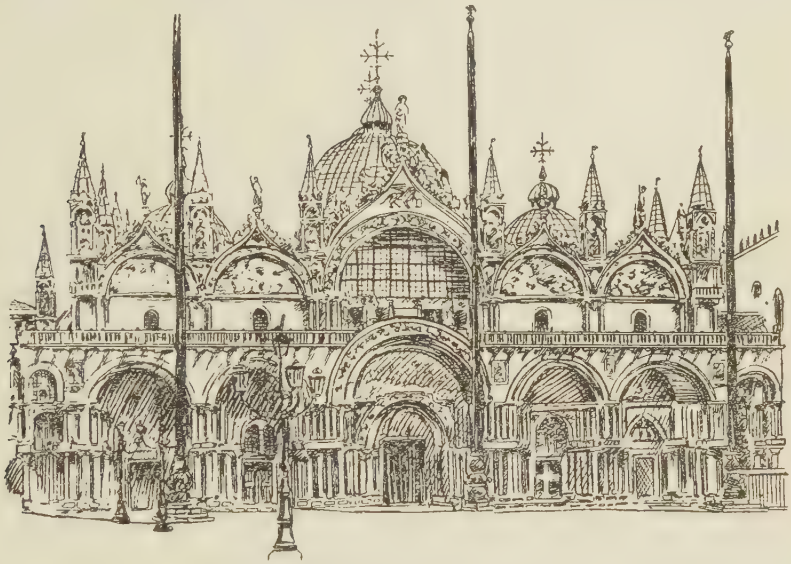
Shipping and Transportation.—In 1918 the total number of steam vessels in the mercantile in Italy was 747, with a tonnage of 624,125. The total length of railway lines was about 11,800 miles. There are about 35,000 miles of telegraph lines.

Finance.—The total estimated revenue for 1919–1920 was 5,699,765,528 lire, and the total expenditure, 6,256,482,917 lire. The public debt amounted in 1919 to $11,415,932,000. The annual interest charges amounted to $459,959,000.

Education.—The total number of pupils in the elementary public schools is about 3,500,000, in private schools, about 150,000, and in evening schools about 200,000. There are also secondary schools, technical schools, normal schools, and technical institutes. The public elementary schools number about 125,000. There are 35 schools of agriculture, with about 1,200 students. In 1919, as a part of its reconstruction work, the Government provided for a national institute for the instruction of illiterate adults.

Its purpose was to give instruction to demobilized soldiers.

Army and Navy.—After the conclusion of the World War, the field army was composed of 12 Territorial Army Corps, subdivided into 30 divisions and 2 cavalry divisions. See ARMIES. The total strength of the field army at the end of 1919 was 800,000, and it was intended to reduce it gradually to 250,000. The total number of men mobilized during the war was 5,615,000. The total casualties amounted to 949,576. Of this 496,921 were dead. Special troops are maintained in Libya, Erithrea, and in Italian Somaliland. For a general account of the modern Italian navy and its strength, see NAVY.



ST. MARK'S, VENICE, ITALY

History.—The ancient history of Italy will be found under ROME (*q. v.*) The modern history begins with A. D. 476, when Odoacer, chief of the Herulians, a German tribe who had invaded the country, was proclaimed King of Italy. In 568 the Lombards (Longobardi), a German people originally from the Elbe, led by their king, Alboin, conquered the Po basin and founded a kingdom which had its capital at Pavia. The kingdom of the Lombards included Upper Italy, Tuscany, and Umbria, with some outlying districts. But on the N. E. coast the inhabitants of the lagoons still retained their independence, and in 697 elected their first doge and founded the republic of Venice. The power of the Pope, though at first recognized only as a kind of paternal authority of the bishop, grew steadily in these troubled times, especially in the struggle against the Lombard kings. Italy, with the exception of the duchy of Benevento and the republics of Lower Italy, thus became a constituent part of the Frankish monarchy, and the imperial crown of the West was bestowed on Charlemagne (800). On the breaking up of the Carlovingian empire Italy became a separate kingdom and the scene of strife between Teutonic invaders. At length Otto the Great was crowned emperor at Rome (961), and the year after became emperor of what was henceforth known as the Holy Roman Empire.

The history of mediæval Italy is much taken up with the party quarrels of the Guelphs and Ghibellines, and the quarrels and rivalries of the free republics of Middle and Upper Italy. In Tuscany the party of the Guelphs formed themselves into a league for the maintenance of the national freedom under the leadership of Florence; only Pisa and Arezzo remained attached to the Ghibelline cause. In Lombardy it was different, Milan, Novara, Lodi, Vercelli, Asti, and Cremona formed a Guelph confederacy, while the Ghibelline league comprised Verona, Mantua, Treviso, Parma, Piacenza, Reggio, Modena, and Brescia. Commercial rivalry impelled the maritime republics to mutual wars. At Meloria the Genoese annihilated (1284) the navy of the Pisans, and completed

their dominion of the sea by a victory over the Venetians at Curzola (1298).

Up till the time of the Napoleonic wars Italy remained subject to foreign domination, or split up into separate republics and principalities. During the career of Napoleon numerous changes took place in the map of Italy, and according to an act of the Congress of Vienna in 1815 the country was parcelled out among the following states:

RIALTO AND GRAND CANAL, VENICE

(1) The Kingdom of Sardinia, consisting of the island of Sardinia, Savoy, and Piedmont, to which the Genoese territory was now added. (2) Austria, which received the provinces of Lombardy and Venetia, these having already been acquired by her either before or during the time of Napoleon. (3) The Duchy of Modena. (4) The Duchy of Parma. (5) The Grand-duchy of Tuscany. (6) The Duchy of Lucca. (7) The States of the Church. (8) The Kingdom of the Two Sicilies. (9) The Republic of San Marino. (10) The Principality of Monaco. The desire for union and independence had long existed in the hearts of the Italian people, and the governments at Naples, Rome, Lombardy, and other centers of tyranny were in continual conflict with secret political societies. The leading spirit in these agitations in the second quarter of the 19th century was Giuseppe Mazzini, who in the end contributed much to the liberation of his country. The French Revolution of 1848 brought a crisis. The population of Lombardy, Venetia, Parma, and Modena took up arms and drove the Austrian troops in retreat to Verona. Charles Albert, King of Sardinia, then declared war against Austria, and was at first successful, but his forces were severely defeated at Novara (March, 1849), when Charles Albert abdicated in favor of his son, Victor Emmanuel. Meanwhile the Pope had been driven from Rome, and a Roman republic had been established under Mazzini and Garibaldi, the leader of the volunteer bands of Italian patriots. Rome was, however, captured by the French, who came to the aid of the

Pope (July, 1849), who resumed his power in April, 1850, under the protection of the French, and the old absolutism was restored. Similar attempts at revolution in Sicily and Naples were also crushed, but the secret societies of the patriots continued their operations. In 1859, after the war of the French and Sardinians against Austria, the latter power was compelled to cede Lombardy to Sardinia, and in the same year Romagna, Modena, Parma, and Piacenza were annexed to that kingdom, which was, however, obliged to cede the provinces of Savoy and Nice to France. In the S. the Sicilians revolted, and supported by 1,000 volunteers, with whom Garibaldi sailed from Genoa to their aid, overthrew the Bourbon government in Sicily. Garibaldi was proclaimed dictator in the name of Victor Emmanuel. In August, Garibaldi crossed to Naples, defeated the royal army there, drove Francis II. to Gaeta, and entered the capital on Sept. 7. Sardinia intervened and completed the revolution, when Garibaldi, handing over his conquests to the royal troops, retired to Caprera. A plebiscite confirmed the union with Piedmont, and Victor Emmanuel was proclaimed King of Italy, thus suddenly united almost, in Mazzini's phrase, "from the Alps to the sea." Only the province of Venice and the Roman territory still remained outside. The former was won by Italy's alliance with Prussia in 1866 against Austria. The temporal power of the Pope was still secured by the French troops at Rome till the French garrison was withdrawn at the outbreak of the Franco-German War in 1870, when Italian troops took possession of the city in the name of King Victor Emmanuel. On June 30, 1871, the seat of government was formally removed from Florence to Rome. In 1878 Victor Emmanuel died, and was succeeded by his son Humbert I., who was assassinated in 1900, whereupon his son succeeded to the throne as Victor Emmanuel III. The period between the accession of Victor Emmanuel III. to the outbreak of the World War was in general one of prosperity in Italy. It was marked, however, by a long and extensive war with Turkey for the possession of Tripoli. This ended in the annexation of that province in December, 1912. In the same year the Triple Alliance with Germany and Austria was renewed, to remain in force until July, 1920. The existence of this alliance roused in Italy unusually difficult problems in 1914. By its terms Italy was bound to assist Germany or Austria-Hungary if either or both these countries should be attacked. Germany, maintaining that she had been attacked by France, called upon Italy to come to her aid. Italy, however, took the view that both Germany and Austria were carrying on a war of aggression rather than defense, and therefore refused to come to their assistance. Additional difficulties were created by the fact that the chief financial and industrial concerns of Italy were either in the hands of Germans or controlled by German capital. In spite of these conditions, pro-ally sentiment continued to develop among the Italian people and this, despite the aggressive efforts of Germany, through Prince von Bülow, as special ambassador to Italy. In order to avert an open rupture, if possible, negotiations were carried on between Italy and Austria-Hungary with the object of inducing Austria to make such territorial concessions to Italy that the latter would find it unnecessary to go to war for the purpose of achieving territorial aspirations, which first of all lay in the recovery of the so-called unredeemed provinces held by Austria. These negotiations came to no effect, as Austria refused to make the concessions necessary, and on May 4, 1915, Italy denounced the Triple Alliance, as far as it affected herself and Austria-Hungary. War was officially declared against Austria on May 23, 1915, and on the following day active operations began. The course of the war as regards Italy is included in the general narrative in the article WORLD WAR. The campaigns fought were in the most difficult terrain possible. Italian armies fought through 15 furious offensives on the Isonzo and the Piave, inflicting terrible losses on the enemy in each offensive. With the exception of the Great Italian Retreat in the autumn of 1917, and the invasion of the northeast corner of Italy by Austrian and German forces, Italy suffered no serious reverses. See ISONZO, BATTLES OF; PIAVE, BATTLES OF. Following the great retreat to the Piave river, the Italian armies under General Diaz reformed and prevented the enemy from crossing the river, except in isolated points. On June 23, they began an offensive along the western bank of the river, and this was continued in a great drive which swept the Austrian troops before them. The movement ended on July 10th, with nearly 35,000 Austrian prisoners and 300,000 Austrian casualties. Operations were carried on so aggressively toward Austria during the succeeding months that on Nov. 3 she was willing to sign an armistice, which amounted to unconditional surrender to Italy. In the operations pre-

ceding this, the Austrian armies had been utterly shattered by 5 Italian divisions, 3 British, 2 French, one Czecho-Slovak, and the 332d American Infantry Regiment.

Italy took a prominent part in the Peace Conference. Her representatives included Vittorio Orlando, Prime Minister, and Baron Sonnino, Foreign Minister. There were vexed problems relating to Italy to be solved. These were concerned chiefly with the ultimate disposition of Fiume and Dalmatia, both of which were claimed by Italy and Jugo-Slavia. Italy claimed that both Fiume and Trieste properly belonged to her. Trieste she received, but Fiume remained the mooted point until November, 1920, when by the so-called Treaty of Rapallo it was agreed between Italy and Jugo-Slavia that Dalmatia, with certain restrictions, should go to Jugo-Slavia, while Fiume should become an independent state. Gabriel D'Annunzio, who had taken possession of Fiume with a body of troops, early in 1919, refused to accept the terms of the treaty, and on December 9, declared Fiume an independent state, and established a so-called "Italian Regency of Quarnero." Forces were sent to compel him to leave the city, and on Dec. 8, following several sharp engagements in which a considerable number of men were killed on both sides, D'Annunzio ceased resistance and retired from Fiume.

LEANING TOWER OF PISA

The economic conditions following the peace treaty gave rise to many disturbances. There were strikes instigated in many cases by radicals throughout the country, in June, 1920. These, however, gradually subsided and comparative economic peace had been reached at the end of the year.

ITASCA LAKE (ī-tas'kä), in Beltrami and Cass counties, Minn.; first seen by William Morrison, a fur trader, in 1804; was explored by Henry Rowe Schoolcraft in 1832. It is the first considerable gathering of the furthermost streams which form the Mississippi, one of these being in volume entitled to be called the young Mississippi; the lake therefore is justly considered the source of the great river. The so-called "Glazier Lake" of some maps is merely an old bay of it partially settled up, and the claim of William Glazier to have discovered the "true source" has no foundation.

ITCH, a popular name for scabies; a disease arising from the irritation produced by the presence in the parts affected of the itch mite and its ova. The animal burrows chiefly between the fingers, on the front of the forearm, on the abdomen, and the inside of the thighs. The disease chiefly assails uncleanly people. It is very common among the natives of India and other Orientals.

ITCH MITE, a small white parasitic spider, of the family *Acaridæ*, producing the disease called itch. The mouth is furnished with bristles; so are the third and fourth pair of legs, while the first and second pair have suckers.

ITHACA (ith'ä-kä), now THIAKI, one of the Ionian Islands, on the W. of Greece, between the mainland and Cephalonia, 17 miles long, and not above 4 broad. It is rugged and uneven, and divided into two nearly equal parts connected by a narrow isthmus. The inhabitants are industrious agriculturists and mariners, and build and fit out a

considerable number of vessels. They seem to be of pure Greek race, and the women are famed for their beauty. Ithaca was the royal seat of Ulysses, and is minutely described in the Odyssey. Schliemann made important excavations, and identified several sites mentioned by Homer. Vathi, the modern capital, trades largely in oil, wine, raisins, and currants. Pop. of Island, 12,000.

ITHACA, a city and county-seat of Tompkins co., N. Y.; on both sides of Cayuga Lake, and on the Lackawanna, the Lehigh Valley, and the Central New York Southern railroads, and the State Barge Canal; 70 miles S. E. of Rochester. It derives water power from Fall creek; has a number of beautiful cascades in its vicinity; and manufactories of glass, typewriters, drop forgings, calendar clocks, firearms, salt, and other commodities. The city is best known as the seat of CORNELL UNIVERSITY (*q. v.*) and the Cascadilla Preparatory School; and also as a popular summer resort. There are National banks, trolley connection with East Ithaca, large farming trade with Tompkins, Tioga, Cortland, and Seneca counties. Pop. (1909) 14,802; (1920) 17,204.

ITHAMAR (ith'ä-mär), the fourth son of Aaron, consecrated to the priesthood. His posterity took charge of the tabernacle in the wilderness. Some of this line, namely, Eli, Ahitub, Ahiah, Ahimelech, and Abiathar, held the office of high priest, but under Solomon it reverted to the family of Eleazar.

ITHOME (ē'thō-mē), a mountain of Greece, in Messenia, 25 miles N. W. of Kalamata, 3,865 feet high. On its S. slope are the remains of a village, which in ancient Greece was the stronghold of the Messenians against the Lacedemonians. The first Messenian war ended with the fall of Ithome, 724 B. C.

ITHONUS (ith'ō-nus), in classic Greek fable, the son of Deucalion and King of Thessaly, reported to have discovered the fusion of metals, and the art of coining money.

ITO, PRINCE HIROBUMI, Japanese statesman; born in the province of Chosu, 1841; assassinated at Harbin, Manchuria, Oct. 26, 1909, by a Korean. The son of a samurai (warrior) of low rank, he was orphaned at an early age and was adopted by relatives. As a boy, with four companions, he worked his way to England on board a Scottish whaler. After his return home he tried to dissuade the Lord of the Province from fighting the Westerners, and for his Western sympathies was attacked by assassins, but was saved by the girl who afterward became his wife. Emerging from the insurrection which placed the present Mikado on the throne, one of the young progressives devoted to the Emperor and the cause of an enlightened Japan, his rise through various positions of trust was rapid, and he took a leading part in formulating the constitution under which Japan is now governed. He visited the United States in 1872. He was created a count for his services to the state and in 1883 became premier, a post he held four times. For his successful efforts in negotiating a peace treaty with China he was made a marquis, and for the next ten years took an important part in government affairs. He foresaw the war with Russia, and exerted himself to strengthen the empire's resources in preparation for that war. In 1905 he was appointed Resident-General in Korea, where he reformed the administration of the country and made it a Japanese province, gaining the hatred of the Koreans, though his measures were not harsh or abitrary. He was elevated to the rank of prince in 1907, and in May, 1909, returned home to become President of the Privy Council. When murdered he was in Harbin to meet the Russian Minister of Finance on the general railway situation in Manchuria.

ITURBIDE, AUGUSTIN DE (ē-tör'-bē-dā), a Mexican soldier; born in Valladolid, Mexico, in 1783. On the breaking out of the revolutionary troubles in Mexico, he joined the royalist party and displayed such valor and ability that in 1815 he rose to the chief command of the army, but latterly went over to the other side, quickly bore down all opposition, and became so popular that he proclaimed himself Emperor of Mexico in 1822. His reign was full of trouble, and came to an end in less than a year, by his abdication. Congress granted him a yearly pension on condition of his leaving the country, and he resided in Leghorn about a year, when he made an attempt to recover the crown. He landed with but a single attendant, and was arrested and shot, in Padilla, July 19, 1824. His grandson was adopted as his heir by the unfortunate Emperor Maximilian.

IVAN (ē-wan'), the name of two grand-dukes and four czars of Russia. The best known, IVAN IV. (1530–1584), commonly called Ivan the Terrible, reigned from 1533, and did much for the advancement of his country in arts and commerce, as well as for its extension

by arms. He was the first Russian sovereign to be crowned as Czar. He subdued Kazan and Astrakhan, and from his reign dates the first annexation of Siberia. He concluded a commercial treaty with Queen Elizabeth, after the English had discovered (1553) the way to Archangel by sea. But his hand fell with merciless cruelty upon the boyars of his kingdom, and upon some of his towns, as Moscow, Tver, and Novgorod. In the last named some 60,000 people were slain in six weeks. Ivan died of sorrow for his son, whom three years before he had slain in a mad fit of rage.

IVES, HALSEY COOLEY, an American artist; born in Montour Falls, N. Y., in 1846. He studied art in South Kensington, London. In 1893 he was placed in charge of the art department at the Chicago World's Fair, and occupied the same position in relation to the St. Louis Exposition. At the latter he received a grand prize for services to art education. He was several times appointed representative of the United States to decide on art matters abroad. He was appointed director of the Museum and School of Fine Arts at St. Louis, in 1896. He died in 1911.

IVORY, the osseous matter of the tusks of the elephant, and of the teeth or tusks of the hippopotamus, walrus, and narwhal. The ivory of the hippopotamus is preferred by the dentist, being free from grain and much harder and of a purer white than that of the elephant. The shavings and saw-dust of ivory may by burning be converted into a black powder, used in painting, named ivory black.

Africa supplies the great bulk of ivory, the Indian wild elephant having become so scarce of late years that India is now obliged to import a considerable quantity of ivory. A vast amount of fossil ivory is also exported from eastern Siberia to various countries. African ivory fetches a higher price than any other, being dense in texture, susceptible of a higher polish and not so liable to turn yellow when exposed to the light as the Indian kind. The tusks of a full grown elephant seldom measure over six feet and weigh from 100 to 200 pounds. The tusk is usually solid for about half its length, the base being quite thin and, therefore, of little use for commercial purposes.

IVORY COAST, a part of the N. coast of the Gulf of Guinea, West Africa, embraces the districts between Cape Palmas and the river Assini. Its W. portion belongs to Liberia; its E., now counted as part of the Gold Coast, is shared between Great Britain and France. The name bears no political meaning.

IVRY (ē-vrē'), a village in the French department of Eure. On the Plain of Ivry was fought, March 14, 1590, the famous battle between Henry of Navarre and the armies of the League. Pop. about 1,200.

IVY, a climbing plant of the genus *Hedera* (*H. Helix*), natural order *Araliaceæ*. The leaves are smooth and shining, varying much in form, from oval entire to three and five lobed; and their perpetual verdure gives the plant a beautiful appearance. The flowers are greenish and inconspicuous. *H. Helix* (the common ivy) is found throughout almost the whole of Europe and in many parts of Asia and Africa. The Irish ivy is cultivated on account of the large size of its foliage and rapid growth. Several varieties of ivy are grown in American gardens. The ivy attains a great age and becomes several inches thick. The wood is soft and porous, and when cut into very thin plates may be used for filtering liquids. In Switzerland and the S. of Europe it is employed in making various useful articles. The ivy has been celebrated from remote antiquity, and was held sacred in some countries, as Greece and Egypt. Its medicinal properties are unimportant. Chinese ivy (*Parechites Thunbergii*) is a climbing shrub with privet-like leaves and sweet-scented flowers.

IXIA, in botany, a genus of *Iridaceæ*. It consists of beautiful Cape bulbs, with spikes of showy flowers. *I. viridiflora* has large sea-green flowers, with black markings. It is from the Cape of Good Hope.

IXTACCIHUATL (ēts-täk'sē-wat-el), a high mountain in Mexico, estimated height 16,077 feet, though some authorities pronounce it higher than Popocatepetl.

IXTLE, a Mexican fiber, probably the production of a species of the pineapple family.

IZABAL, a lake in Guatemala; also the name of a district in the same country. Area 4,500 square miles; pop. about 4,000.

J

J, j, the 10th letter and the 7th consonant in the English alphabet. It was formerly interchangeable with i, the same character being used for both. It is a palatal, its sound being that of g in gem or of dg in ridge, edge.

As a symbol, j is used in medical prescriptions at the end of a series of numbers for 1; as, vij. = seven, viij. = eight, etc.

JABALPUR (jub-al-pör′), chief town of Jabalpur district, Central Provinces, India. Standing at the junction of the East Indian and Great Indian Peninsula systems, Jabalpur is one of the most important railways stations in India. It is the second commercial town in the Central Provinces, and manufactures cotton, tents, and carpets. Pop. about 100,650. The district of Jabalpur has an area of 3,918 square miles, and a population of about 700,000.

JABORANDI (jäb-ō-ran′dē), a plant, either a piper or of the rutaceous genus *Pilocarpus*. It is valued in medicine as a sudorific.

JABLUNKA PASS (yäb-lön′ka), a pass across the Carpathian Mountains, in Hungary. It is 1,970 feet high, and is traversed by a railroad.

JACA (yä′ka), the devil in the mythology of Ceylon.

JACAMAR (jak′ä-mar), the name generally given to the birds ranked under *Galbulidæ*, a sub-family of *Alcedinidæ* or kingfishers. The jacamars have the bill less stout than the typical *Alcedinæ;* their body also is more slender; the tail long; the toes either in two pairs, or two before and one behind, the anterior ones being united. They are bright-colored birds, generally with a good deal of green in their plumage. They are found in the tropical parts of South America and in the West Indies.

JACANA (jak-ä′nä), a genus of grallatores (*Parra* of Linnæus), family *Rallidæ*, distinguished by the extraordinary length of their toes and their spine-like claws, especially that of the hinder toe. They are very light birds; and the wide surface over which their toes extend enables them the more easily to procure their food, consisting of worms, small fishes, and insects, by walking on the leaves of aquatic plants which float on the water. Various species of the jacana, which in contour and habit resemble the English moor hen, are spread over the tropical regions of both the Old and New World.

JACCHUS (jak′us or yak′us), a name given to the sapajous of the genera *Hapale* and *Midas*, also commonly known as marmozets, ouistitis, and tamarins. They are monkeys of small size, with short muzzle, flesh colored face, and round head. The five fingers are armed with claws, except the thumbs of the posterior extremities, which have nails; fur very soft; tail full and handsome. Length of body about eight inches; tail 11. General color olive-gray; head and shoulders nearly black; the tail and lower part of the back are annulated with pale gray; and two tufts of pale hair grow round the ears. They are squirrel-like in their habits, and omnivorous; feeding on roots, seeds, fruits, insects, snails, and young birds. Natives of Guiana and Brazil.

JACITARA (jas-it-ā′rä), in botany, *Desmoncus macracanthos*, a fine palm, 50 or 60 feet long, with a stem as thin as a cane. It grows along the Amazon and the Rio Negro.

JACK, or **JACA** (*Artocarpus integrifolia*), a tree of the same genus with the bread fruit, a native of the East Indies. It is a larger tree than the bread fruit, and has larger fruit.

JACKAL, the *Canis* (*Sacalius*) *aureus*, an animal of the family *Canidæ*, and presenting a close affinity to the dog. It is yellowish-gray above, whiter under-

neath, the tail is bushy and at its extremity tipped with black. The jackal inhabits the warm parts of Africa, southern Asia, and Europe. It hunts in packs and feeds on carrion. There is another species, *C. mesomelas*, the black-backed jackal. It is found at the Cape of Good Hope.

JACKASS PENGUIN (*Eudytes demersa*), a species of penguin which rises to the surface and again dives with great rapidity, so that, according to Darwin, it might be mistaken for a fish leaping for sport.

JACK DAW, or **DAW**, in ornithology, *Colæus* or *Corvus monedula*, the smallest of crows, being but 13 inches in length. The general color is black, with a grayish shade on the margins of the feathers, the back and wings purplish; the crown of the head is glossy blue-black, forming a cap; the neck hoary-gray, the bill and feet black, the eye bluish-white.

JACK RABBIT, a large rabbit or hare found in the S. and W. of the United States.

JACKS, LAWRENCE PEARSALL, an English writer and theologian; born in Nottingham in 1860. He was educated at the University School at that city, at the University of London and foreign universities, and Harvard. In 1887 he entered the Unitarian ministry, and was for a time assistant to Stopford A. Brooke. In 1903 he became professor of philosophy in Manchester College, and was editor of the "Hibbert Journal" in 1902. He contributed many brilliant essays and studies to magazines. During the war he performed important services in connection with work carried on at Oxford. His published writings include: "Mad Shepherds and Other Human Studies" (1910); "Among the Idol-makers" (1911); "All Men Are Ghosts" (1913).

JACKSCREW, a lifting implement which acts by the rotation of a screw in a threaded socket.

JACKSON, a city and county-seat of Jackson co., Mich.; on the Grand river, and several lines of railroads; 76 miles W. of Detroit. It is the trade center and distributing point for coal, oil, and farming implements for South Central Michigan; and has manufactories of machinery, corsets, chemicals, oil stoves, glass, paper and refrigerators. The city contains the State prison; derives large power for manufacturing from the river; has the Holly system of waterworks, electric light and street railway plants, a National and other banks, daily, weekly, and monthly periodicals. Pop. (1910) 31,433; (1920) 48,374.

JACKSON, a city, capital of the State of Mississippi, and county-seat of Hinds co.; on the Pearl river and several important railroads; 40 miles E. of Vicksburg. It contains the State Lunatic Asylum, State Institution for the Deaf and Dumb, State Law Library, State prison, Millsaps College for Men, a National bank. It is the farming and cotton raising trade center for four counties, and besides a variety of industries connected with cotton, it has iron foundries, brick and lumber yards, railroad repair shop, fertilizing factories, and agricultural implement factories. Jackson is lighted by electricity, and has an extensive trade, especially in cotton, through the port of New Orleans. Pop. (1910) 21,262; (1920) 22,817.

JACKSON, a city and county-seat of Madison co., Tenn.; on the Forked Deer river, and the Illinois Central, and several other railroads; 150 miles S. W. of Nashville. It is the farming trade center for a region having a population of 175,000 and is an important cotton market; and has manufactories of engines and boilers, bicycles, cottonseed oil, lumber, machinery, and woolen mills. Jackson is the seat of the Southwestern Baptist University, the Memphis Conference Female Institute, and Lane College. There are National banks, daily, weekly, and monthly periodicals, a waterworks plant, owned by the city and valued at $400,000. Pop. (1910) 15,779; (1920) 18,860.

JACKSON, a city of Ohio, the county seat of Jackson co. It is on the Hocking Valley, the Baltimore and Ohio, Southwestern, and the Detroit, Toledo and Ironton railroads. It has important coal and iron mines, foundries, a shoe factory, railroad shops, and other industries. Pop. (1910) 6,468; (1920) 5,842.

JACKSON, ANDREW, an American statesman and soldier; 7th President of the United States; born in the Waxhaw Settlement, N. C., March 15, 1767. His father died before his birth. His education was very limited, and he was not given to study. After serving a short apprenticeship with a saddler, at the age of 18 he entered a law office in Salisbury to prepare for the law. His practice was large and prosperous. In 1791 he married Mrs. Rachel Robards. Tennessee was admitted to the Union in 1796, and Jackson was sent as its Representative to Congress. He was elected to the Senate in 1797, but resigned his

seat in 1798 to become judge of the Tennessee Supreme Court, where he served six years. When the War of 1812 broke out, he offered his services to Madison, then President, with 2,500 volunteers of Tennessee militia, of which he was commander-in-chief. In 1814 Jackson was made a major-general, and put in command of the Department of the South. He asked permission to drive the British out of Florida, where, by Spanish permission, they had established a base of operations. Failing to receive

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an answer because of the capture of Washington by the British, Jackson proceeded on his own responsibility. He repulsed the enemy at Mobile, took Pensacola by storm, and then marched to New Orleans, where he fortified the city. A force of 12,000 of Wellington's veterans, relieved by the victory of Waterloo for American service, landed below the city. Jackson had 6,000 men to meet them, but they were well protected by breastworks. The British general, Packenham, resolved to take the defenses by storm. Jackson's victory was complete. The British were repulsed in half an hour, with a loss of 2,600 men, Packenham himself being among the slain. This great and decisive victory, achieved with but the loss of eight men, coming in the wake of several reverses to the American cause, made Jackson the hero of the nation. When, in 1819, the United States purchased Florida, Jackson was appointed governor. In 1823 he was elected to the United States Senate. In 1824 he was nominated by the Federalist and by the Republican conventions for the presidency. The election went to the House of Representatives, which chose John Quincy Adams. But in 1828 Jackson was again nominated, beating Adams by a large electoral and popular majority. His administration was memorable and stormy. He introduced the theory that "to the victors belong the spoils," and made wholesale removals of Federal officials to make room for his own appointees. South Carolina, under the lead of John C. Calhoun, the Vice-President, attempted to nullify the tariff law, calling a convention Nov. 19, 1833, which declared the law unconstitutional. Jackson sent a naval force under Farragut to Charleston harbor. He attacked the United States Bank, opposing the renewal of its charter, which would expire in 1836. He vetoed the bill renewing the charter. He was re-elected in 1832 by largely increased majorities. He succeeded in securing the removal of the public funds from the United States bank to various State banks. After his second term of office as President, Jackson lived mostly in retirement at "The Hermitage" near Nashville, where he died June 8, 1845.

JACKSON, CHARLES THOMAS, an American scientist; born in Plymouth, Mass., June 21, 1805; was graduated at Harvard Medical College in 1829, and practiced in Boston; became State geologist for Massachusetts and Maine in 1836, and land-surveyor and State geologist for Rhode Island in 1839; appointed to survey the Lake Superior copper-mining district in 1847. He claimed to have been the first to point out, in 1832, the applicability of electricity to telegraphic use, and also claimed to be the discoverer of the anæsthetic effects of the inhalation of ether in 1842; received the Montyon prize of 2,500 francs from the French Academy of Sciences in 1852. He published a "Manual of Etherization, with a History of its Discovery" (1861); "Report on the Mineral Lands of the United States in Michigan" (1849); etc. He died in Somerville, Mass., Aug. 28, 1880. See ANÆSTHESIA.

JACKSON, FREDERICK GEORGE, a British explorer; born in 1860. He was educated at the University of Edinburgh. In 1886 he made a whaling voyage in the Arctic seas. This was followed in 1893 by a journey of 3,000 miles to unexplored parts of Siberia. In 1894 he explored Franz Josef Land and

made an attempt to explore the North Pole. During this journey he met Nansen, who was at that time returning from his attempt to reach the Pole. He made important researches in Franz Josef Land from 1894 to 1897. For his accomplishments here, he was awarded a gold medal by the Geographical Society of Paris. He took part in the Boer War, reaching the rank of major. He wrote many books on the Arctic, including: "The Great Frozen Land" (1895); "A Thousand Days in the Arctic" (1899).

JACKSON, HELEN MARIA FISKE HUNT, an American author; born in Amherst, Mass., Oct. 18, 1831; received an academic education; she became interested in improving the conditions of the Indians and was appointed a special commissioner to investigate the condition of the Mission Indians of California. She was the author of "Bits of Travel" (1872); "A Century of Dishonor" (1881); "The Hunter Cats of Connorola" (1884); "Ramona" (1884); "Zeph" (1886); etc. She died in San Francisco, Cal., Aug. 12, 1885.

JACKSON, ADMIRAL SIR HENRY BRADWARDINE, a British naval officer; born in Barnsley, 1855. He entered the British Navy in 1868, and by 1896 had risen to the rank of captain. From 1897 to 1899, he acted as naval attaché in various European capitals. In 1905 he was appointed Controller of the Navy, which office he held for three years. From 1908 to 1910 he was commander of the Sixth Cruiser Squadron in the Mediterranean, after which he was commander of the Royal Navy War College until 1913. From 1912 to 1914 he was Chief of the War Staff. After the outbreak of the European War he was, during 1915–1916, First Sea Lord of the Admiralty, and as such had considerable influence in the preparation of Great Britain's plans for operations against the German fleets. From 1916 till 1919 he was President of the Royal Navy College at Greenwich, after which he was appointed active fleet admiral of the British Navy. Admiral Jackson is known as one of the most progressive of the chief British naval commanders; he was the first to make use of the Hertzian waves for wireless telegraphy in the Royal Navy.

JACKSON, SHELDON, an American educator; born in Minaville, N. Y., May 18, 1834; was graduated at Union College in 1855, and at Princeton Theological Seminary in 1858; ordained in the Presbyterian Church; was missionary to Western Wisconsin and Southern Minnesota in 1859–1869; Superintendent of Missions in Wyoming, Colorado, New Mexico, Arizona, Utah, and Montana in 1870–1882; appointed to Alaska in 1877. He was made United States general agent for Alaska in 1885; introduced reindeer into that territory in 1891; special United States agent to influence Laplanders to colonize in Alaska in 1898. He is the author of "Alaska and Missions on the North Pacific Coast" (1880); "Education in Alaska" (1881); annual reports on "Education in Alaska" from 1886; and annual reports on the "Introduction of Domestic Reindeer into Alaska" (1891–1901); etc. He was moderator of the Presbyterion General Assembly. In 1896 he gave $50,000 to the University of Utah. He died in 1909.

JACKSON, THOMAS JONATHAN, an American military officer; born in Clarksburg, Va., Jan. 21, 1824; was graduated at the United States Military Academy in 1846; served through the

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Mexican War, winning promotions more rapidly than any other officer of his grade during that war. When the Civil War began, he was commissioned colonel in the Virginia forces; was placed in command of the Virginia brigade; met the advance of General Patterson at Falling Waters on July 2, 1861, gave the National force a decided check, and cap-

tured a number of prisoners. Soon after he was commissioned Brigadier-General. In the first battle of Bull Run he won his new name "Stonewall" when Gen. Bernard E. Bee, in the crisis of the fight, shouted: "See, there is Jackson standing like a stonewall; rally on the Virginians!" He was promoted Major-General and placed in command of the district that included the Shenandoah valley and the section of Virginia N. W. of it. During the winter he drove the National forces out of his district. In March, 1862, he fell back before Banks' army of 35,000 men, and Banks reported him "in full retreat from the valley" and started a column to cross the mountains and attack Johnston in flank, as he was falling back from Manassas, when Jackson suddenly turned, marched 18 miles in the morning, and with 2,700 men fought at Kernstown, near Winchester, 8,000 of the National troops, and though defeated, accomplished his purpose in recalling the column which was moving on Johnston's flank, quietly moved up the valley and took a strong position in Swift Run Gap. Then followed in rapid succession the uniting of Ewell's division with his at Luray, the driving in of Banks' flank at Front Royal, the cutting of his retreating column at Middletown, and on May 25, the rout of Banks' army from the heights of Winchester.

He was about to cross the Potomac into Maryland in pursuit of Banks, when he learned that Fremont from the W., and Shields, the head of McDowell's column, from the E., were marching to form a junction in his rear at Strasburg. He at once put his army in motion, and by forced marches reached the point of danger in time to hold Fremont in check with one hand and Shields with the other till his whole army, prisoners, and immense wagon trains loaded with captured stores passed on in safety. He then moved leisurely up the valley, burning the bridges over the Shenandoah to prevent a junction between Fremont and Shields.

He next hastened to Richmond, where he united with General Lee in attacking McClellan. His skill in the Seven Days' battles, his defeat of Pope's advance under Banks at Cedar Run, his flank march to Pope's rear, and the pertinacity with which he held him at bay along the Warrenton road till Lee could come up with Longstreet and drive him into the fortifications around Washington, his capture of Harper's Ferry with 11,000 prisoners, 13,000 stand of small arms, 73 pieces of artillery, and large quantities of provisions and stores of every description, and his conduct on the field of Sharpsburg, all added greatly to his fame.

He was promoted Lieutenant-General in October, 1862; and held the extreme right of Lee's army at Fredericksburg, where he repelled the attack of Franklin. Toward the end of April, 1863, he was sent with 22,000 men to make a march to Hooker's flank and rear. This was brilliantly executed and Jackson routed that flank of Hooker's army, and was proceeding to cut him off from his line of retreat and take a position where Hooker would have been compelled to attack him in position, when in returning from one of those bold reconnaissances which he so frequently made, his party was mistaken for the enemy and fired on by his own men and he was very severely wounded. His left arm was amputated, his other wounds, dressed, and he was improving hopefully, when pneumonia suddenly developed and caused his death in Guinea Station, Va., May 10, 1863.

JACKSONVILLE, a city and county-seat of Duval co., Fla.; on St. Johns river, and the Florida East Coast, and other railroads; 139 miles S. of Savannah. The city is about 30 miles from the coast; and has regular steamer communication with all points on the St. Johns river, and also to Charleston, New York, and Boston, and sailing vessel communication with various foreign ports. The city is a farming, fruit growing, and lumbering trade and jobbing center for Florida and Southern Georgia. It has valuable phosphate interests. Jacksonville is highly esteemed as a winter resort, especially by people from the Northern and Eastern States. It is the seat of St. Luke's Hospital, the largest in the State, and the general offices of the Florida, Central and Pensacola, and the Jacksonville, Tampa and Key West railroads. There is an excellent system of docks. The city has National and several State and private banks. During the American-Spanish War, Jacksonville was used extensively as a point of embarkation of troops and supplies for Cuba, and as a coaling station. Pop. (1910) 57,699; (1920) 91,-558.

JACKSONVILLE, a city and capital of Morgan co., Ill.; on the Wabash, Chicago and Alton, the Chicago, Peoria and St. Louis, and the Chicago, Burlington and Quincy railroads; 34 miles W. of Springfield, the State capital. The city, which is popularly known as the "Athens of the West," is the seat of Illinois College, Illinois Woman's College, Illinois College of Music, Illinois State Institutions for the Education of Deaf

Mutes and the Blind, State Central Insane Hospital, Passavout Memorial and Our Saviour Hospitals. The city is the trade center for Morgan, Scott, and parts of Green and Cass counties; is largely concerned in the agricultural industry; has manufactories of woolen goods, candy, steel products, machinery, woven wire, pumps, and wind mills, boilers, brick and tile, paper, and flour. There are a National and other banks, daily, weekly, and semi-monthly periodicals. Pop. (1900) 15,078; (1910) 15,326; (1920) 15,713.

JACMEL (zhäk-mel'), a seaport on the S. coast of Haiti, 30 miles S. W. of Port au Prince. It has a good anchorage. Pop., estimated, 10,000.

JACOB, the son of Isaac and Rebecca, the grandson of the Jewish patriarch Abraham, and the twin, but younger brother of Esau, was the father of 12 sons, from whom the 12 tribes of Israel were descended. He was the favorite of his mother, by whose advice he imposed upon his father, and obtained his blessing, having before taken an advantage of Esau, by purchasing his birthright. To avoid his brother's fury, he fled to Padanaram, where he resided with his uncle Laban, whom he served 14 years for his daughters Leah and Rachel. He afterward returned to Canaan with great wealth, and a reconciliation took place between him and his brother Esau. His name was altered to Israel by an angel; whence his posterity have been called Israelites. He lived to the age of 147 years. He died in the land of Goshen, about 1680 B. C.

JACOBI, ABRAHAM, an American physician; born in Westphalia, Germany, in 1830. He studied at various universities in Germany and became identified with the German revolutionary movement of 1848, when he was indicted for high treason, escaping to New York. He acted as professor of diseases of children in several important hospitals in New York and became known as one of the first authorities of children's and other diseases. He was a member of many important medical societies. He wrote many books relating to medical subjects, including "The Raising and Education of Abandoned Children in Europe" (1870); "Infant Diet" (1875); "Therapeutics of Infancy and Childhood" (1895–1903). He died in 1919.

JACOBI, MARY PUTNAM, an American physician; born in London, England, Aug. 31, 1842. She graduated from the Woman's Medical College, Philadelphia; College of Pharmacy, New York; and the School of Medicine, Paris. Among her works are: "The Value of Life"; "Hysteria, and Other Essays"; "Studies in Primary Education." She died June 11, 1906.

JACOBIN CLUB (jak'ō-bin), a political organization, which bore a prominent part in the French Revolution.

JACOBITE, a term first applied in England to the party which adhered to James II., after the Revolution of 1688, and afterward to those who continued to maintain sentiments of loyalty toward the house of Stuart, and sought to secure the restoration of that family to the English throne. The unsuccessful rebellions of 1715 and 1745 in Scotland, were brought about by the agency of the Jacobites. In Scotland the party maintained its strength till the failure of the rebellion of 1745 put an end to its political existence.

In ecclesiastical history, a Christian sect which arose during the 5th century, and maintained that Christ had but one nature. They were thus named from Jacob Baradæus, Bishop of Edessa, and apostle of the East, who restored the sect about 545. From this man, Mosheim remarks, as the second father of the sect, all the Monophysites in the East are called Jacobites. Baradæus died in 578. A small section of the Jacobites joined the Roman Catholics in the 17th century, but the majority remained firm in the faith of their ancestors. Riddle enumerates among the remains of Oriental sects or Christian communities existing in 1037, the Syrian Jacobites living under their patriarch at Antioch. Roger of Wendover mentions a new sect of preachers called Jacobites, because they imitated the life of the apostles, who sprang up in 1198, under the auspices of Pope Innocent III. They were mendicants, and suffered great privations. Mosheim believes the sect ceased to exist soon after the Council of Lyons, in 1274.

JACOBS, W. W., an English novelist; born in London in 1863. He was educated in private schools and in 1883 entered the Civil Service. His first book, "Many Cargoes," appeared in 1896 and received instant recognition as a work of unusual merit and of unusual qualities of humour. This was followed by many other books of the same character. These include "More Cargoes"; "The Lady of the Barge" (1902); "Captains All" (1905); "Sailors' Knots" (1909); "Night Watches" (1914). He also wrote

with Louis N. Parker a play entitled "Beauty and the Barge."

JACOB'S LADDER (*Polemonium cæruleum*), a herbaceous perennial plant of the natural order *Polemoniaceæ*, a doubtful native of Great Britain, but more common in Central and Southern Europe, and found also in the temperate parts of Asia and of North America. It is common in flower gardens in Great Britain. It has pinnate leaves, with ovato-lanceolate leaflets, a smooth stem 1½ to 2 feet high, and a terminal panicle of bright blue (sometimes white) flowers, with wheel-shaped five-lobed corolla. Great medicinal virtues were once ascribed to it, but the only quality which it seems to possess is a slight astringency.

JACOB'S STAFF, a pilgrim's staff, so designated from the pilgrimages made to the Shrine of St. James at Compostella in Spain. Also a staff containing a concealed dagger.

In surveying, an instrument for taking altitudes, having a brass circle divided into four equal parts by two diametric lines. At each extremity is a perpendicular riglet over the lines, with a hole below each slit for discovering objects. The cross is mounted on a staff. Also an instrument used to measure distances and heights. Also a straight rod shod with iron, and with a socket joint and pintle at the summit for supporting a surveyor's circumferentor.

JACOB'S STONE, a stone fabulously said to be that on which Jacob rested his head at Luz, which was used as the coronation stone of the kings of Scotland at Scone, in Perthshire, and was thence transferred by Edward I. to Westminster, where it still remains, inclosed in the coronation chair.

JACOBUS, MELANCTHON WILLIAMS, an American educator, born in Allegheny City, Pa., in 1855. He graduated from Princeton University in 1877, and from Princeton Theological Seminary in 1881. Following study abroad, he was ordained to the Presbyterian ministry in 1884. After serving on the faculty of the Hartford Theological Seminary he was appointed acting president of that institution in 1902, and became dean of the faculty in 1903. He was acting pastor of the Central Congregational Church of Hartford from 1889 to 1900. He was director of theology in several colleges and universities. He wrote several works on theological subjects, including "A Problem in New Testament Criticism" (1900); "Commentary on the Gospel of Mark." He contributed theological articles to several encyclopedias.

JACOBY, HAROLD, an American astronomer, born in New York City in 1865. He graduated from Columbia University in 1885 and took post-graduate courses at that university. He occupied several places in the astronomical department of Columbia University and became professor of astronomy in 1904. He was acting director of the observatory at Columbia from 1903 to 1906, and in the latter year became director. In 1889 and 1890 he was assistant astronomer for the United States eclipse expedition to West Africa. He was a member of many astronomical and scientific societies. He wrote much on astronomical subjects and his chief works are "Practical Talks by an Astronomer" (1903); "Navigation" (1917). He also contributed many articles to newspapers and magazines and to several encyclopedias.

JACQUARD LOOM, a loom for weaving figured goods.

JACQUERIE (zhäk-er-ē′), a name popularly given to a revolt of the French peasantry against the nobility, which took place while King John was a prisoner in England in 1358. Jacques Bonhomme was a term of derision applied by the nobles to the peasants, from which the insurrection took its name. It began in the Beauvais, under a chief of the name of Caillet, and desolated Picardy, Artois, and Brie, where savage reprisals were executed against the nobility for their oppressions. It was suppressed after some weeks.

JACUHY (zhä-kö-ē′), a river of Brazil, province of Sao Pedro do Rio Grande; length, about 250 miles.

JACUSI (jak-ö′sē), in Japanese mythology, the god of medicine.

JADE, a name applied to about 150 varieties of ornamental stones, but should be properly restricted to the mineral nephrite, so called from the Greek *nephros* because it was supposed by the ancients to have virtue in renal diseases. The name is from the Spanish *ijada*, "the flank" (from the Latin *ilia*), because it was believed to cure pain in the side; and the mineral was brought by the Spaniards from Mexico. True jade is a native silicate of calcium and magnesium, tough, and of various shades of green, yellowish-gray, and greenish-white. It is principally found in China, Siberia, New Zealand, and in some of the islands of the South Pacific, while its occurrence

has also been reported in British Columbia and Alaska.

JAEN, a city of Spain, capital of the province of the same name; on a tributary of the Guadalquivir; 50 miles N. by W. of Granada. The cathedral dates from 1532. By the Moors the town was called *Jayyenu-l-harir*, "Jaen of the Silk," on account of its silk manufactures, for which, however, it is no longer famous. The province (area, 5,184 square miles), part of Andalusia, lies wholly within the basin of the Guadalquivir, and is for the most part mountainous. Conquered by the Moors on their entrance into Spain, Jaen maintained its independence as a Moorish state till 1246, until captured by Ferdinand III. of Castile. Pop. (1917) province, 356,293; town, 30,947.

JAFFA, or **JOPPA**, a town on the sea coast of Syria, 33 miles N. W. of Jerusalem. Hence Jonah sailed for Tarshish; here Peter had his vision. Under Constantine the place, which had been destroyed by Vespasian, became a bishop's see, and as the great landing place of the Crusaders was taken and retaken by Christian and Moslem. In 1799 Napoleon stormed it and massacred his prisoners; in 1832 it was taken by Mehemet Ali, and restored to the Turks by British help. Pop. about 45,000. Jaffa was captured by the British in November, 1917. See WORLD WAR.

JAFFNAPATAM, a seaport in the extreme N. of Ceylon, on an island of the same name; has been peopled by Tamils for more than 2,000 years. A large sprinkling of the European population is of Dutch descent Pop. (1911) 40,441.

JAGHIRE (jag'hēr), in Hindustan, a term closely corresponding to the fief of mediæval Europe. It is an assignment of the government share of the produce of a portion of land to an individual, either personal or for the support of a public establishment.

JAGOW, GOTTLIEB VON, a German public official. Born in 1863, he received his education at Bonn University. In 1895 he entered the diplomatic service and became attaché at Rome and later at Munich. In 1897 he was in Rome serving first as Secretary of the German Embassy there and after 1909 as Ambassador. In 1912 he played a large part in inducing Italy to remain in the Triple Alliance, and largely because that power was friendly to him he was appointed Foreign Minister in 1913 to succeed Von Kiderlen-Waechter. He was unable to do what was expected of him, however, and when Italy entered the war against Austria a severe blow to his prestige was given. He conducted the negotiations with the United States during the time the relations between the two powers were strained, and exerted all his influence to prevent the declaration of ruthless submarine warfare. He retired in 1916 because of ill health and because he was unable to endure the demands of the military chiefs for a change in his policies.

JAGST, or **JAXT** (yaxt), a river in Württemberg which unites with the Neckar, 6 miles N. of Heilbronn. It is over 160 miles in length. Also a portion of Northeastern Württemberg, with an area of 1,983 square miles. Pop. about 425,000.

JAGUAR, a ferocious looking feline animal, a little larger than a leopard, which it resembles in color, except that in the jaguar the spots are arranged in larger and more definite groups. It is found in the S. part of the United States, through Mexico, Central America, and Brazil, as far S. as Paraguay. It will attack horses, cattle, and even man.

JAHDE, or **JADE** (yä'dä); a bay in the N. of Oldenburg, belonging to Prussia, which has a naval station on its shores.

JAHN, FRIEDRICH LUDWIG (yän), a German educator; born in Brandenburg, in 1778. After graduating with distinction at the universities, he, in 1809, went to Berlin, where he became teacher at the Kölnisches Gymnasium, and published his "German Popularity." He then set about the establishment of gymnasia throughout the "Fatherland," whence is derived the "Turnkunst," or system of physical education so well known and appreciated in the United States. He died in 1852.

JAINS, or **JAINAS** (jāns), the name of a religious sect among the Hindus. They are very numerous in the Southern and Western provinces of Hindustan, and are principally engaged in commerce. It is believed that Jainism is of much later origin than Buddhism or Brahmaism. The principal points of difference between them and the Brahmanical Hindus are: (1) A denial of the divine origin of Vedas; (2) the worship of certain holy mortals, who, by living exemplary lives here and by self-mortification, had raised themselves superior to the gods; and (3) extreme tenderness for animal life; in all of which points they resemble the Buddhists. Their moral

code, or "great duties," are: (1) Refraining from injury to life; (2) truth; (3) honesty; (4) chastity; (5) freedom from worldly desires. Their four "merits" are—liberality, gentleness, piety, and penances. They number about 1,000,000, chiefly found throughout Hindustan.

JAIPUR (jī-pör′), a native State of Rajputana, India; area (including feudatories), 15,579 square miles; pop. about 2,700,000; passed under British protection in 1818. Capital, Jaipur, the chief city of Rajputana, an important trade center and noted for its fine buildings; dates from 1728; pop. about 137,000.

JAISALMIR, JAYSALMIR (jī-sal-mēr′), or **JESSELMERE**, a State in Western Rajputana, India; bounded on the N. by the Punjab, on the E. by Bekanir and Marwar, on the S. by Marwar, on the W. by the Bombay Presidency and the Punjab; area, 16,447 square miles; pop. 75,000. It is mostly a sandy desert, though containing a few oases, and the climate presents great extremes of heat and cold. Main industry, cattle-raising; barley and mullet are also cultivated. Most of the inhabitants are JATS (*q. v.*). Capital, Jaisalmir; pop. about 10,000.

JALAP (so called from Jalapa, in Mexico, whence it is imported), the name given to the tuberous roots of several plants of the order *Convolvulaceæ*, that of *Ipomæa purga* being the most important. This is a twining herbaceous plant, with deep pink flowers, growing naturally on the E. declivities of the Mexican Andes, at an elevation of from 5,000 to 8,000 feet. The jalap of commerce consists of irregular ovoid dark-brown roots. The drug jalap is one of the most common purgatives.

JALAPA (Hä-lä′pä), capital of the Mexican State of Vera Cruz; 60 miles N. W. of Vera Cruz City; in a charming and fertile district, in a healthful and temperate climate, 4,330 feet above the sea. The principal buildings are the old Franciscan monastery (1556), the church of St. Joseph, and the government offices. Pop. about 25,000.

JALISCO (Hä-lēs′kō), a State of Mexico, on the Pacific, with an area of 38,840 square miles. It is traversed by the Sierra Madre, and in great part forms a plateau. The climate is healthful away from the coast. The principal river is the Rio Grande de Santiago; in the S. E. is the lake of Chapala. Silver and copper mining and agriculture have been the chief industries; but within recent years a number of cotton, woolen, paper, and tobacco factories have been established. Pop. about 1,220,000. The capital is Guadalajara.

JAMAICA, a former town and county-seat of Queen's co., N. Y.; since Jan. 1, 1898, a portion of the borough of Queens in Greater New York; on the Long Island railroad, 10 miles E. of the former city of Brooklyn. The town was settled in 1656, and contains many houses dating from before the Revolutionary War, some of which are occupied by direct descendants of the original Dutch settlers. This portion of the borough has large market garden interests, and several carriage factories.

JAMAICA, one of the West India Islands, 80 or 90 miles S. of Cuba, the third in extent, and the most valuable of those belonging to Great Britain; 146 miles in length E. to W., and 49 miles broad at the widest part; area, 4,200 square miles; pop. (1917) 904,681. The capital is Kingston; pop. about 60,000. The coast is indented with a number of good harbors, of which Port Royal or the harbor of Kingston is the most considerable. The interior is traversed by lofty mountains in all directions; the principal chain, called the Blue Mountains, reaching the height of 7,270 feet. Jamaica is well watered, having numerous rivers and springs. Earthquakes of a violent character have been frequent. The climate in the districts along the coast is, in most places, exceedingly hot, but is not on the whole unhealthful. There are two rainy and two dry seasons. Among the indigenous forest trees are mahogany, lignum vitæ, ironwood, logwood, braziletto, etc. The native fruits are numerous, and many of them delicious; they include the plantain, guava, custard apple, pineapple, sour sop, sweet sop, papaw, cashew apple, etc. The orange, lime, lemon, mango, grape, bread fruit tree, and cinnamon tree have all been naturalized in the island. The chief cultivated vegetable products are sugar, coffee, maize, pimento, bananas, and other fruits, ginger, arrow root. Sweet potatoes, plantains, and bananas form the chief food of the blacks. The cinchona tree has been introduced, and is spreading. Of wild animals only the agouti and monkey are numerous. Cattle-raising has become profitable. Fish abound in the sea and rivers.

The exports are sugar, rum, coffee, dyewoods, fruit, and pimento. The government is vested in the governor, assisted by a privy council, and a legislative council composed of 29 members, 14 elected, the others nominated or *ex officio*,

The English Church is presided over by a bishop, assisted by a regular staff of parochial clergy. The Baptists, Methodists, Presbyterians, and other Protestant bodies are well represented, and there is a considerable number of Roman Catholics and Jews.

Jamaica was discovered by Columbus in 1494, in his second expedition to the New World. In half a century the cruelty of the Spanish conquerors exterminated the natives. It was taken by Cromwell in 1655, and ceded to England by the treaty of Madrid in 1670. Of late many Chinese and coolies have been employed in agriculture. In 1865 a serious revolt broke out among the blacks at Morant Bay, and was put down with considerable severity by Governor Eyre. Politically dependent on Jamaica are the Cayman Islands, and the Turks and Caicos Islands.

The Secretary of the Colonies of Great Britain in 1899 directed that in pursuance of official recommendations, an income tax, increased stamp duties, and an increased land-tax should be imposed, in order to raise the necessary increase of revenue. He also directed the governor to appoint a full number of nominated members of the Legislature, and keep them appointed. He further stated that the Colonial Office would in future exercise control over the finances of the colony. There was much local opposition, in consequence, and one element in the population suggested application to the United States for annexation.

JAMAICA BAY, an inlet of the Atlantic Ocean S. of Long Island, N. Y.

JAMBUDVIPA (jam-bö-dwē'pä), in Sanskrit poetry and Buddhist writings, a name given to India, though strictly it is applicable to the whole earth, of which India was regarded as the principal part.

JAMES, a name of two, if not three, persons mentioned in the New Testament. (1) JAMES, the son of Zebedee, and brother of the Evangelist John. Their occupation was that of fishermen. We find James, John, and Peter associated on several interesting occasions in the Saviour's life. They alone were present at the Transfiguration (Matt. xvii: 1; Mark ix: 2; Luke ix: 29); at the restoration to life of Jairus' daughter (Mark v: 42; Luke viii: 51); and in the garden of Gethsemane during the Agony (Mark xiv: 33; Matt. xxvi: 37; Luke xxii: 39). With Andrew they listened in private to our Lord's discourse on the fall of Jerusalem (Mark xiii: 3). James and his brother appear to have indulged in false notions of the kingdom of the Messiah. (Matt. xx: 20–23; Mark x: 35). From Luke ix: 54, we may infer that their temperament was warm and impetuous. On account, probably, of their boldness and energy in discharging their apostleship, they received from their Lord the appellation of Boanerges, or "Sons of Thunder." James was the first martyr among the apostles. Clement of Alexandria, in a fragment preserved by Eusebius, reports that the officer who conducted James to the tribunal was so influenced by the bold declaration of his faith as to avow himself also a Christian; in consequence of which he was beheaded at the same time. He is the patron saint of Spain. (2) JAMES, the son of Alphæus, one of the 12 apostles (Mark iii: 18; Matt. x: 3; Luke vi: 15; Acts i: 13). His mother's name was Mary (Matt. xxvii: 56; Mark xv: 40); in the latter passage he is called James the Less, either as being younger than James the son of Zebedee, or on account of his low stature (Mark xv: 1; Luke xxiv: 10). (3) JAMES, "the brother of the Lord" (Gal. i: 19).

Epistle of St. James.—The first of the general epistles. It was penned by either James, the son of Alphæus, or James, the brother of our Lord, if the two were different; by the apostle who bore both designations if they were the same. It was addressed to the 12 tribes scattered abroad, *i. e.*, to the Jewish converts to Christianity beyond the limits of Palestine. Its teaching is in disconnected portions, and treats more of conduct than of belief, though the indispensableness of faith to efficacious prayer is strongly insisted on (i: 6). Portions of it look antagonistic to the teaching of St. Paul (see Rom. iii: 28 with James ii: 21, 25). The epistle was written probably at Jerusalem. Its date is uncertain. It has been fixed in A. D. 44 or 45, in A. D. 60, in A. D. 62, and not till the 2d century. It figures in the Syrian Version of the New Testament. It was ranked by Eusebius among his antilogoumena. In A. D. 397 the Council of Carthage placed it in the canon. Though Luther spoke disrespectfully of it, yet it is now generally accepted as a portion of Divine Scripture.

JAMES I., King of Scotland; son of Robert III.; born in 1394. He was taken by the English on his passage to France, and kept in confinement 18 years. In 1424 he obtained his liberty, on condition of marrying the daughter of the Earl of Somerset. He severely punished those who had governed his country in his ab-

sence, for which he was murdered in his bed in 1437.

JAMES II.; born in 1430, succeeded the preceding king, his father, at the age of seven years. He assisted Charles VII. of France against the English, and punished rigorously those lords who had revolted against him. He was killed at the siege of Roxburgh in 1460.

JAMES III.; born about 1453, was the son and successor of the above, and ascended the throne in 1460. He put to death his brother John, and committed so many cruelties that his subjects revolted. He was killed in 1488.

JAMES IV.; born about 1473, succeeded his father, the last-mentioned, at the age of about 15 years. He defeated the rebellious lords, and assisted Louis XII., King of France, against the English; but was slain at the battle of Flodden Field, in 1513.

JAMES V., the son of the above; born in 1512, was only a year old at the time of his father's death. At the age of 17 he assumed the government, and assisted Francis I. of France against the Emperor Charles V., for which the French king gave him his daughter Margaret in marriage. On her decease, he married Mary of Lorraine, daughter of Claude, Duke of Guise. On his death, James left his crown to Mary Stuart, his daughter. He died in 1542.

JAMES I., of England and VI. of Scotland; born in the castle of Edinburgh, in 1566, was the son of Henry Stuart, Lord Darnley, by Mary, Queen of Scots, daughter of James V. When only a year old he was proclaimed king, on the forced resignation of his mother, and in 1603 he succeeded Queen Elizabeth on the English throne. A plot was soon after discovered to seize on him, and place his cousin, the Lady Arabella Stuart, on the English throne in his stead, for which Lords Cobham and Grey, and Sir Walter Raleigh were indicted. But, in 1605, the more desperate attempt to blow up the king, prince, and both houses of Parliament, known as the Gun-powder Plot, was discovered, for which Guy Fawkes and many other persons were executed. In 1606, he established episcopacy in Scotland, and made peace with Spain. In 1612, his son, Prince Henry, by Anne of Denmark, died, and the same year his daughter was married to Frederick, the elector-palatine. One of the greatest blots of his reign was the execution of Sir Walter Raleigh. He died in 1625.

JAMES II., of England; born in London in 1633. He was the second son of Charles I. He was declared Duke of York soon after his birth. At the Restoration he returned to England, where he secretly married Anne Hyde, daughter of the Earl of Clarendon, by whom he had two daughters, who afterward became queens of England; viz., Mary and Anne. In the Dutch war he signalized himself as commander of the

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English fleet, and showed great skill and bravery. On the death of his first wife, he married Mary Beatrix of Modena. He succeeded to the throne on the death of Charles II. in 1685; but his zeal for the Roman Catholic religion leading him into measures subversive of the constitution the Prince of Orange, who had married his daughter Mary, was invited to England by several of the English nobility, and the king, finding himself abandoned by his friends, withdrew to France. He died in St. Germain in 1701.

JAMES, DANIEL WILLIS, an American philanthropist and merchant, born in Liverpool, England, in 1832. In his early youth he entered the employ of Phelps, Dodge & Co., in New York. He soon became a member of the firm and acquired a large fortune. He gave large sums to various institutions, including the Union Theological Seminary, Amherst and Oberlin colleges, Columbia University and the Cathedral of St. John the Divine. At his death he left large legacies to these and other colleges and organizations. To the town of Madison, N. J., he presented a public park, a library, and an assembly hall.

JAMES, EDMUND JANES, an American educator, born in Jacksonville, Ill., in 1855. He was educated at the Illinois

State Normal School and at Northwestern and Harvard Universities. He also studied in Germany. For several years he acted as principal of high schools in several cities in Illinois. From 1883 to 1895 he was professor of public finance and administration in the Wharton School of Finance and Economy, at the University of Pennsylvania. At the same time he held the chair of political and social science in that university. From 1896 to 1901 he was professor of public administration and director of the extension division at the University of Chicago. He was elected president of Northwestern University in 1902 and of the University of Illinois in 1904. From 1889 to 1901 he was president of the American Academy of Political and Social Science, and from 1891 to 1895 was president of the American Society for the Extension of University Teaching. He wrote much on educational and economic subjects. The most important of his works are "The Federal Constitution of Germany" (1890); "The Education of Business Men in Europe" (1899); "Growth of Great Cities" (1900).

JAMES, FRANCIS EDWARD STUART; born in 1688, known as CHEVALIER DE ST. GEORGE, or the OLD PRETENDER, was the son of James II., by his second wife, Mary d'Este. In 1708 he sailed from Dunkirk with a French fleet for the invasion of Scotland, but the vigilance of the English admiral, Sir George Byng, prevented the execution of the plan, and the prince returned to France. In 1715 a rebellion in his favor, headed by the Earl of Mar, broke out in Scotland. In December, the Pretender himself arrived at Peterhead, assumed royal state, formed a council, and made a progress through the country, but the case was hopeless, and he was glad to escape to Gravelines. In 1719 the prince married Maria Clementina, daughter of the King of Poland, by whom he had two sons, Charles Edward, the Young Pretender, and Henry, Cardinal of York. Maria Clementina died in 1735. Disaffection and restlessness continued in Great Britain and showed themselves from time to time in overt acts, and in 1745 another Jacobite rebellion broke out in Scotland, Prince Charles Edward landing there, and getting his father proclaimed once more. This struggle ended with the defeat of the Jacobites at Culloden by the Duke of Cumberland, 1746. The Pretender died in Rome, where he had lived for many years, in 1765.

JAMES, GEORGE PAYNE RAINSFORD, an English novelist; born in London, England, in 1801. While still very young he manifested a considerable turn for literary composition, and produced, in 1822, a "Life of Edward the Black Prince." His first novel, "Richelieu," was published in 1829. Its success determined him to continue fiction writing and he produced over 60 novels and histories in rapid succession. Among them are "De L'Orme"; "Life of Charlemagne"; "Darnley"; "Henry Masterton"; "Mary of Burgundy"; "The Gipsy"; "History of Chivalry." Later he accepted the office of British consul, first at Richmond, Va., and afterward at Venice, where he died in 1860.

JAMES, GEORGE WHARTON, an American ethnologist; born in Gainsborough, England, Sept. 27, 1858; devoted himself to researches in geology, archæology, and ethnology in California, Nevada, and other Western States. He was the author of "The Lick Observatory" (1888); "The Missions and Mission Indians of California"; "In and Around the Grand Canyon" (1900); "Indian Basketry" (1900); "Reclaiming the Arid West" (1916); "The House Blessing and Guest Book" (1918).

JAMES, HENRY, an American novelist and essayist; born in New York, April 15, 1843. He was educated in

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France and Switzerland and at Harvard Law School. After 1869 he made his home in England. His works include: "Transatlantic Sketches" (1875); "A

Passionate Pilgrim and Other Tales" (1875); "Roderick Hudson" (1876); "The American" (1877); "Watch and Ward" (1878); "French Poets and Novelists" (1878); "Daisy Miller: a Study" (1878); "The Europeans: a Sketch" (1878); "The Madonna of the Future and Other Tales" (1879); "Hawthorne" (1879); "Washington Square" (1880); "The Portrait of a Lady" (1882); "Daisy Miller: a Comedy" (1883); "Portraits of Places" (1883); "Tales of Three Cities" (1884); "The Art of Fiction" (1885), with Walter Besant; "Stories Revived" (2 vols. 1885); "The Author of Beltraffio" (1885); "The Bostonians" (1886); "The Princess Casamassima" (1886); "Partial Portraits" (1888); "The Reverberator" (1888); "A London Life" (1889); "The Tragic Muse" (1890); "The Lesson of the Master" (1892), a volume of stories; "The Real Thing and Other Tales" (1893); "Picture and Text" (1893); "Essays in London and Elsewhere" (1893); "The Wheel of Time" (1894); "Terminations" (1895); "What Maisie Knew" (1897); "In the Cage" (1898); "The Two Magics" (1898); "The Awkward Age" (1899); "The Soft Side" (1900); "The Sacred Fount" (1901); "A Small Boy and Others" (1913). Died Feb. 28, 1916.

JAMES, MONTAGUE RHODES, a British educator. He was born in Suffolk and educated at Eton and Cambridge. He became Sandars Reader in Bibliography at Cambridge in 1903, and vice-chancellor in 1913. He was for a time director of Fitzwilliam Museum, and has been provost of King's College, Cambridge, since 1905. He is now provost of Eton. His works include: "Ancient Libraries of Canterbury and Dover"; "Ghost Stories of an Antiquary"; several editions of books of the Bible, and other works.

JAMES, OLLIE M., United States Senator from Kentucky, born in 1871. He received an academic education and after studying law was admitted to the bar in 1891. He became active in politics and was elected chairman of the Kentucky State Legislature Convention. He was elected to Congress in 1903 and was re-elected to successive Congresses to 1913 when he took his place in the Senate to which he had been elected in the previous year. He was chairman of the Democratic National Convention in 1912. He died in 1918.

JAMES, WILLIAM, an American educator; born in New York city, Jan. 11, 1842; received a private education; accepted the chair of philosophy at Harvard College in 1872; was Gifford lecturer on Natural Religion at the University of Edinburgh in 1899–1901. He is the author of "Principles of Psychology" (2 vols.); "Psychology: Briefer Course"; "The Will to Believe; and Other Essays in Popular Philosophy"; and "Talks on Psychology and Life's Ideals." He died Aug. 27, 1910.

JAMES ISLAND, one of the islands in the harbor of Charleston, S. C., at the mouth of the Ashley river. The battle of Secessionville (June 16, 1862) and several other engagements of the Civil War were fought here.

JAMES MILLIKIN UNIVERSITY, an institution for higher education at Lincoln, Ill., and Decatur, Ill., founded in 1865. It was formed by a combination of Lincoln College and Decatur College. In 1919 there were 73 members of the faculty and 1,538 students. The library contains about 10,000 volumes. The annual income is about $600,000. President, E. A. R. Taylor.

JAMESON, ANNA, an Irish author and critic; born (Murphy) in Dublin in 1794. Mrs. Jameson published in 1831 her first important work, entitled "Memoirs of Female Sovereigns," and this was succeeded in the following year by "Characteristics of Women." But it is as an art critic that Mrs. Jameson is best entitled to remembrance. Chief among these works were: "Lives of Early Italian Painters" (1845); "Poetry of Sacred and Legendary Art" (1848); "Legends of the Monastic Orders" (1850); "Legends of the Madonna" (1852); and a "Commonplace Book of Thoughts, Memories, and Fancies" (1845). She died in Ealing, March 19, 1860.

JAMESON, SIR LEANDER STARR, a British administrator; born in Edinburgh in 1853. He was educated at London University. Having become associated with Rhodes in the development of South Africa, he was appointed Administrator of Rhodesia in 1891, and held the position with distinction till the raid on the Transvaal in 1895, when he was defeated at Krugersdorp. He was afterward given up to the imperial authorities, tried and sentenced to 10 months' imprisonment. After seven months, however, he was released, owing to ill health. In 1897 he returned to Rhodesia and assisted in the development of the country. Was Prime Minister of Cape Colony 1904-1908, when he resigned and returned to London. Was chairman of

the Central Prisoners of War Committee during the World War. He died in 1917.

JAMES RIVER, a river in Virginia; formed by the union of the Jackson and Cowpasture rivers, passes through the Blue Ridge, and pursues a devious course as far as Scottsville. At Richmond it falls 100 feet in six miles, thereby affording a grand water power. Above this point the James river and Kanawha canal extends, following the course of the river, and embracing extensive reaches of slack water navigation, to Buchanan, 196 miles. The tide comes up to the Rocketts, just below Richmond. This is the head of navigation for steamboats and schooners of 130 tons. Shipping of the first class comes up to City Point, 40 miles below, at the mouth of the Appomattox. Below City Point the river is a broad, deep, tidal estuary, 66 miles long. The James river flows into Chesapeake Bay through Hampton Roads. The entire length from Covington, Va., to Old Point Comfort is some 450 miles.

JAMES'S BAY, the S. arm of Hudson Bay, about 250 miles long from N. to S., and 175 miles wide. It is greatly beset with islands, and its navigation is dangerous.

JAMESTOWN, a city in Chautauqua co., N. Y., at the outlet of Chautauqua Lake, and on the Erie, the Jamestown, Chautauqua and Lake Erie, and several other railroads, 69 mile S. W. of Buffalo. It is the trade center for Chautauqua county, and the distributing point for Chautauqua Lake resorts; connected by trolley with Falconer and Lakewood; is largely concerned in the agricultural industry; and has manufactures of cloth, boots and shoes, furniture, axes, and other edge tools, pianos, iron fabrics, and brooms. The city contains the Jamestown High School, a National and other banks; has daily, weekly, and monthly periodicals. Pop. (1910) 31,297; (1920) 38,917.

JAMESTOWN, a district of James City co., Va., the first permanent English settlement within the limits of the United States; founded in 1607 on a peninsula 32 miles from the mouth of James river. It has now become an island by the action of the current, which has carried away a portion of the site of the ancient town. Only the ruins of the church, the fort, and of two or three houses mark the spot. Jamestown became the capital of an extensive colony, and in 1619 a house of burgesses, the first legislative assembly ever convened in British America, met here. After the seat of government was removed to Williamsburg Jamestown began to decline; it was burned by Nathaniel Bacon during the rebellion of 1676, and never rebuilt. It was the scene of an engagement between the forces of Wayne and those of Lord Cornwallis in 1781.

JAMESTOWN TERCENTENNIAL EXPOSITION, held at Hampton Roads, Va., in 1907 to celebrate the three-hundredth anniversary of the founding of the first permanent English colony in America. The principal buildings were grouped about the center of the exposition, a square named Raleigh Court. All of the original colonies which had developed into States in the Union were represented by buildings, usually erected to represent some famous colonial structure in that State. The Pennsylvania building was a replica of Independence Hall, that of Massachusetts, the old State House in Boston. There were in all about 2,500 exhibits showing the state of the principal arts and manufactures. Numerous gold, silver and bronze medals were awarded as prizes. Although over a million and a half paid admission to the exposition, the financial results were poor, a deficit of two millions remaining to be raised.

JÄMTLAND or **JEMTLAND**, also called Ostersund, a län or province of Sweden bounded on the W. by Norway. It is very mountainous, and only a small part of the land is under cultivation. There are numerous forests and large lakes. The entire area covers 19,712 miles. Pop. about 200,000.

JAMUNA, the name of several rivers of Northern India, the chief being the lower section of the Brahmaputra, and that which connects it directly with the Ganges.

JANAUSHEK (yän'ō-shek), **FRANCESCA ROMANA MAGDALENA**, a Polish actress; born in Prague, Bohemia, July 20, 1830. She began her career in Cologne, playing in that city and in Frankfort from 1848 to 1860. She afterward played in Dresden and all the principal cities of Germany. In 1852 she was married to Capt. Frederick Pillot, of the German navy. She made her first tour in America in 1867–1869, and at once secured favorable notice. Returning to Germany, she studied English, and in 1873 made her second visit to the United States, when she played in English the most exacting Shakespearean rôles. She retired from the stage in 1898, and died Nov. 29, 1904.

JANE, FREDERICK T., an English naval writer and novelist; born in 1870.

He was originally intended for the navy, but became a writer instead. He published "Blake of the 'Rattlesnake'" (1895); "To Venus in Five Seconds" (1897); "All the World's Fighting Ships" (1898–1899); "The Torpedo in Peace and War" (1898); "The Jane Naval War Game" (1898); "The British Battle Fleet" (1912); "The Navy as a Fighting Machine" (1914). Died 1916.

JANESVILLE, a city and a county-seat of Rock co., Wis.; on both sides of Rock river, and on the Chicago, Milwaukee and St. Paul, and the Chicago and Northwestern railroads; 70 miles W. S. W. of Milwaukee and 91 miles N. W. of Chicago. It is the farming trade center for five counties, having a population of 120,000; and its manufactories include flour mills, woolen mills, machine shops, foundries, carriage factories, and breweries. Janesville is the seat of St. Joseph's (R. C.) Convent State School for the Blind, and Oak Lawn and Palmer Memorial Hospitals. There are 2 National banks, daily, weekly, and monthly periodicals, and an assessed property valuation of over $2,000,000. Pop. (1910) 13,894; (1920) 18,293.

JANEWAY, EDWARD GAMALIEL, an American physician; born in New Jersey, Aug. 31, 1841. He was graduated at Rutgers in 1860 and at the New York State College of Physicians and Surgeons in 1864. He practiced in New York, and after 1873 was Professor of Pathological Anatomy at Bellevue Hospital Medical College, being an authority on the heart. In September, 1901, he was consulting specialist for President McKinley. He died Feb. 10, 1911.

JANIN, JULES (zhä-n*ang*), a French critic, journalist, and novelist; born in St. Étienne, Feb. 16, 1804. He caught the fancy of the Parisians with his literary and theatrical criticisms. In 1870 he was elected to the French Academy. Among his stories and novels, "The Dead Donkey and the Guillotined Woman," "Confession," and "A heart for Two Loves," are conspicuous. His permanent work is probably the collection of papers called "History of Dramatic Literature." He died in Paris, June 19, 1874.

JANINA, or **JOANNINA** (yän-ēn'ä), formerly capital of a vilayet in Turkish Albania, on a lake (12 miles long by 3 broad) of the same name, 50 miles inland from the shore opposite the island of Corfu. Its buildings include more than 20 ecclesiastical edifices, and the ruined castle of Ali Pasha, whose headquarters were at Janina. Gold lace is extensively manufactured, as well as morocco leather, silk goods, and colored linen. The population, which numbered 40,000 under Ali Pasha, is now about 17,000. The Greeks besieged and captured the place in 1913, and the Treaty of London and Bucharest awarded it to Greece.

JAN MAYEN LAND, a volcanic island in the Arctic Ocean, named after the Dutch navigator by whom it was discovered in 1611. It lies between Iceland and Spitzbergen, and is 35 miles long. Its highest point is the extinct volcano of Beerenberg, 8,350 feet, the sides of which are covered with immense glaciers and frozen waterfalls. In 1882–1883 it was made the station of the Austrian polar expedition. Important seal and whale fishings are carried on E. and N. of Jan Mayen every summer.

JANSENISTS, a party in the Roman Catholic Church, which arose about the middle of the 17th century and was attacked by the Jesuits as heretics. The Jansenist propositions were condemned by Pope Innocent X. as heretical; but this by no means ended the dispute, for the Jansenists contended that they were condemned in a sense different from that which they were intended to bear by the author. An appeal was again made to the Pope, and in 1656 a new bull was issued by Alexander VII., declaring that Jansenius meant the propositions in the sense condemned by the previous bull. A formulary was now drawn up, conformable to the new bull, and all ecclesiastical persons were required to sign it, on pain of being suspended from their offices. Most of them refused, and a schism was thus occasioned in the French Church, which lasted for some time. The Port Royalists, Arnauld, Pascal, Nicole, Persault, were conspicuous for their defense of Jansenism, and carried the war into the enemy's country, attacking the Jesuits notably in the "Provincial Letters" of Pascal. Clement IX. attempted to compromise matters by asking merely a rejection of the five propositions, without ascribing them to Jansenius. The liberal policy of Innocent XI. tended still more to restore peace. In 1698, however, the smoldering fire was again stirred up into a fierce flame by the appearance of Father Quesnel's "Moral Observations on the New Testament." Quesnel was banished from the country; and in 1709 Louis XIV. suppressed and destroyed the monastery of the Port Royal. In 1713 Clement XI. issued his famous bull "Unigenitus," condemning 101 propositions of Quesnel's work. The strife continued for some time after this, and many of the Jansenists emigrated to Holland. A number of

the French clergy still hold the principles of Jansenius. While Jansenism remained in France a theological school, it became in the Netherlands an independent Church. In 1704, Codde, the vicar-apostolic of the archbishopric of Utrecht, was deposed by the Pope for holding Jansenistic views; but the chapter refused to acknowledge the validity of this deposition, and in 1723 they chose an archbishop of their own. Since that time they have had an archbishop at Utrecht, and bishops at Haarlem and Deventer. These Jansenists call themselves by preference the disciples of St. Augustine.

JANUARIUS, ST., or SAN GENNARO, a martyr of the Christian faith under Diocletian. Bishop of Benevento in the 3rd century. According to the Neapolitan tradition, he was taken prisoner at Nola; and the place of his martyrdom, in 305, was Pozzuoli. His body is preserved at Naples, in the crypt of the cathedral, and in a chapel of the same church are also preserved the head of the martyr, and two phials supposed to contain his blood. On three festivals of each year—the chief of which is the day of the martyrdom, Sept. 19, the others the first Sunday evening in May and Dec. 16, as well as on occasions of public danger or calamity, the head and the phials of the blood are carried in solemn procession to the high altar of the cathedral, or of the church of St. Clare, where after prayer of longer or shorter duration, the blood, on the phials being brought into contact with the head, is believed to liquefy and is presented for the veneration of the people, or for the conviction of the doubter. It occasionally happens that a considerable time elapses before the liquefaction takes place, and sometimes it altogether fails. The latter is regarded as an omen of the worst import.

JANUARY, the first month of the year. It was, among the Romans, held sacred to Janus, from whom it derived its name, and was added to the calendar along with February by Numa. It was not till the 18th century that January was universally adopted by European nations as the first month of the year, though the Romans considered it as such as far back as 251 B. C.

JANUS (jān'us), one of the divinities of ancient Rome, and the only one having no equivalent in the Grecian mythology. He was represented as a son of Apollo, and as having built a small town on the Tiber, which he called Janiculum. As the name implies, Janus was the god of doors and gates, and in token of his office carried a key in his hand. The first month of the English year receives its name from him, and he presided over the dawn of every day and the commencement of every undertaking. Janus was usually represented with two heads, looking in opposite directions. His temple at Rome was kept open in the time of war, and shut in time of peace.

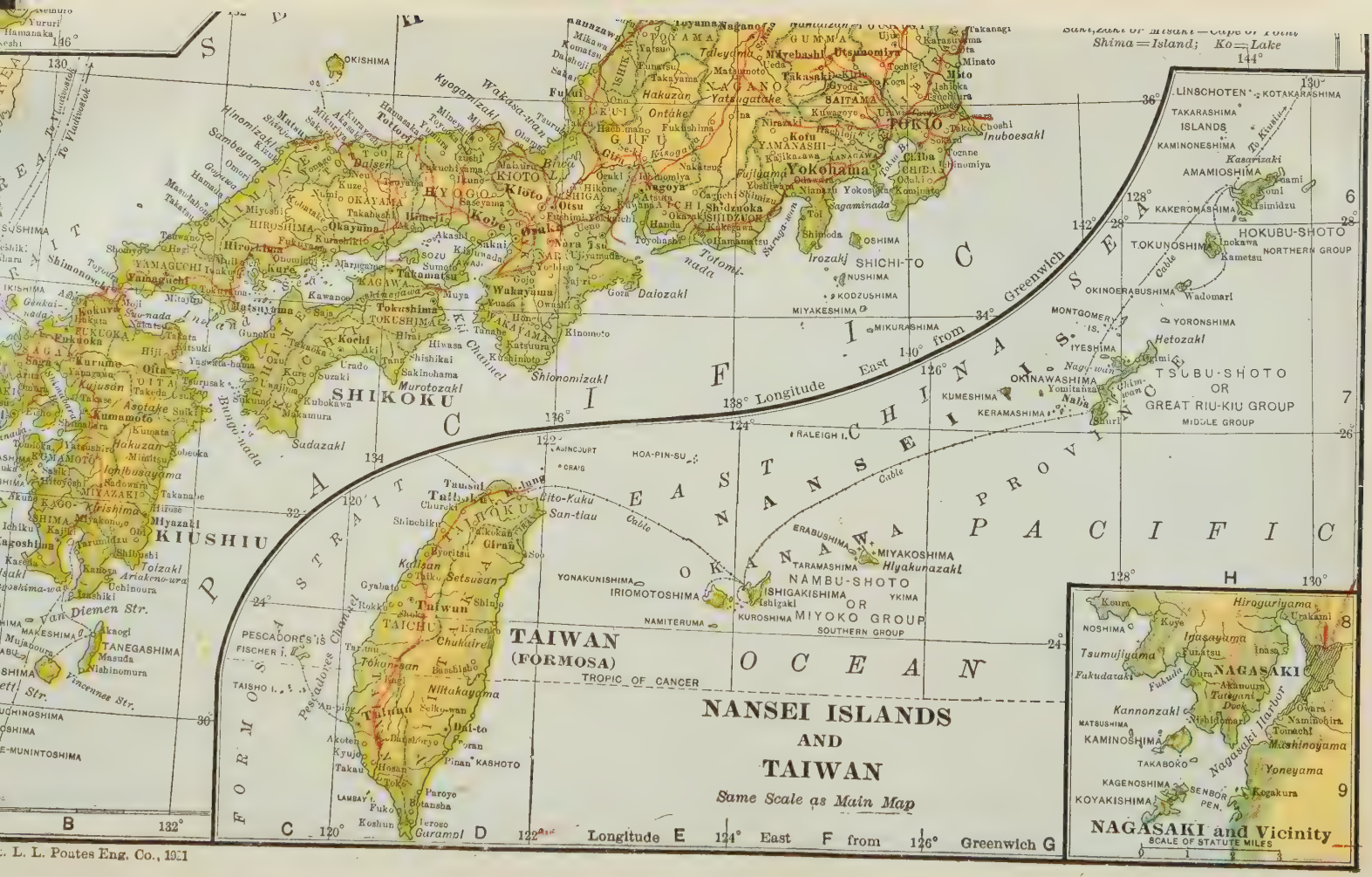
JANVIER, THOMAS ALLIBONE, an American author; born in Philadelphia, Pa., July 16, 1849; received a common school education; engaged in newspaper work in his native city in 1870–1881; lived in New York during most of the period 1884–1894, and then went abroad. He is the author of "Color Studies" (1885); "The Mexican Guide" (1887); "The Aztec Treasure House" (1890); "Stories of Old New Spain" (1891); "In Old New York" (1894); "In the Sargasso Sea" (1898); "The Passing of Thomas and Other Stories" (1900); "From the South of France" (1912); "At the Casa Napoleon" (1914). Died 1913.

JAPAN, an island empire in the North Pacific Ocean, off the Asiatic coast. *Area and Population.*—The total area, including Japan proper, Korea, Formosa, Karafuto, Kwantung, and Pescadores, is 260,738 square miles. The population of Japan proper in 1918 was 57,784,935, exclusive of Korea, Formosa, and the army. The population of Korea is about 17,000,000, and of Formosa about 3,700,000. The total population of Japan is about 77,000,000. Japan proper consists of four large and many smaller islands, with an area of 148,756 square miles.

Physical Features.—The islands of Japan appear to be the highest portions of a huge chain of mountains which rises from a deep ocean bed; they are the advanced frontier of the Asiatic continent. This chain, though dotted with volcanoes, is not therefore itself of volcanic origin. Earthquakes occur very frequently in Japan, though the W. slope, facing the Asiatic continent, is exempt. Its plains and valleys, with their foliage surpassing in richness that of any other extra-tropical region, its arcadian hillslopes and forest-clad heights, give it a claim to be considered one of the fairest portions of the earth. The sublime cone of the sacred Fuji-san (Fusiyama, Aino, "Fire-goddess Mountain"), an extinct or rather dormant volcano, rises from the sea to a height of 12,365 feet.

Climate.—The late autumn is the driest and most agreeable season. The ocean current known as the Kuroshiwo ("Black Stream") considerably modifies

TOKIO BAY
SCALE OF STATUTE MILES
0 5 10
KURIL ISLANDS
(CHISHIMA)
Same Scale as Main Map
JAPAN
SCALE OF STATUTE MILES
0 25 50 100 150
SCALE OF KILOMETERS
0 50 100 150
Important towns are shown in heavy face type
Railways shown thus
SCALE OF MILES
0 50 100
LOWER PORTION OF SAKHALIN
KAMCHATKA
PARAMUSHIR
SHUMSHIR
ALAID
HOKUSHU
YEZO
HONSHIU
SEA OF OKHOTSK
PACIFIC OCEAN
SEA OF JAPAN
GULF OF TARTARY
TOKIO
Yokohama
Hakodate
Sapporo
Aomori
Akita
Morioka
Sendai
Niigata
Fukushima
Mito
Nagoya
Kanazawa
Kyoto
Osaka
Kobe
Hiogo
Okayama
Hiroshima
Shimonoseki
Nagasaki
Kagoshima
Kumamoto
Fukuoka
Matsuyama
Takamatsu
Tokushima
Kochi
Wakayama
Tsu
Gifu
Fukui
Toyama
Kanazawa
Maebashi
Utsunomiya
Mito
Chiba
Kofu
Nagano
Matsumoto
Takasaki
Kumagaya
Urawa
Tokio
Yokohama
Kawasaki
Yokosuka
Hakodate
Otaru
Sapporo
Asahikawa
Muroran
Kushiro
Obihiro
Nemuro
Abashiri
Wakkanai
Rumoi
Iwamizawa
Tomakomai
Chitose
Esashi
Hakodate
Aomori
Hachinohe
Miyako
Kamaishi
Ofunato
Ishinomaki
Sendai
Shiogama
Onahama
Mito
Tsuchiura
Kasumigaura
Tokio Bay
Sagami Bay
Suruga Bay
Ise Bay
Osaka Bay
Hiogo
Kii Channel
Bungo Channel
Van Diemen Str.
Boussole Str.
Kruzenshtern Str.
Amphitrite Str.
La Perouse Strait
Tsugaru Str.
Tsushima Str.
Shimonoseki Str.
Kii Channel
Uruga Channel
Sagami B.
Tokio


Shima = Island; Ko = Lake
JAPAN SEA
PACIFIC OCEAN
PHILIPPINE SEA
EAST CHINA SEA
HONSHU
SHIKOKU
KIUSHIU
TAIWAN (FORMOSA)
NANSEI ISLANDS AND TAIWAN
Same Scale as Main Map
TROPIC OF CANCER
Greenwich from East Longitude
138° Longitude
NANSEI SHOTO PROVINCE
NANSEI ISLANDS
TSUBU-SHOTO OR GREAT RIU-KIU GROUP
MIDDLE GROUP
NAMBU-SHOTO OR MIYOKO GROUP
SOUTHERN GROUP
HOKUBU-SHOTO
NORTHERN GROUP
ISHIGAKISHIMA
IRIOMOTOSHIMA
MIYAKOSHIMA
OKINAWASHIMA
KUMESHIMA
KERAMASHIMA
TARAMASHIMA
YONAKUNISHIMA
NAMITERUMA
KUROSHIMA
HOA-PIN-SU
RALEIGH I.
ASHCROFT
CRAIG
Tito-Kuku
San-tiau
Cable
Tatibana
Tainan
Taihoku
Giran
Kelung
Soo
Kagi
Tainan
Taihoku
Shinchiku
Taichu
Tarenko
Chukirei
Toko-san
Nittakayama
Dai-to
Kotosho
Pinan
KASHOTO
Paroyo
Botansha
Koshun
Gurampi
Pescadores Channel
PESCADORES IS
FISCHER I.
TAISHO I.
Bashi Str.
Van Diemen Str.
Vincennes Str.
Tanegashima
Masuda
Nishinomura
Akagi
Toizaki
Ariakeno-ura
Ichibusayama
Kumamoto
Asotake
Aso-san
Kujusan
Hakuzan
Sudazaki
Murotozaki
Shionomizaki
Kii Channel
Bungo-nada
Inland Sea
Kii-suido
Kii-nagashima
Shikoku
Kochi
Tokushima
Tokushima
Tatsuno
Kawanoe
Takamatsu
Sakaide
Marugame
Muya
Sakaiminato
Hiroshima
Kure
Iwakuni
Yamaguchi
Ube
Shimonoseki
Moji
Kokura
Yawata
Fukuoka
Hakata
Saga
Kurume
Oita
Nagasaki
Sasebo
Hirado
Tsushima
Iki
Genkai-nada
Tsushima Str.
Tsushima Current
To Vladivostok
Kyogamizaki
Wakasa-wan
Tsuruga
Fukui
Kanazawa
Toyama
Takaoka
Naoetsu
Nagano
Matsumoto
Takayama
Fukushima
Hachinohe
Aomori
Hakodate
Mutsu
Sado
Niigata
Sakata
Tsuruoka
Akita
Noshiro
Hachirogata
Omono
Yokote
Kakunodate
Morioka
Hanamaki
Kitakami
Ofunato
Kamaishi
Miyako
Hinomisaki
Shimane-hanto
Oki-shoto
Dogo
Matsue
Yonago
Tottori
Kurayoshi
Misasa
Okayama
Kurashiki
Tamashima
Takahashi
Fukuyama
Onomichi
Mihara

the climate of the S. E. coast; thus, while snow seldom lies more than five inches deep at Tokyo, in the upper valleys of Kaga, near the W. coast, 18 and 20 feet are common. The E. coast of Yezo is visited by a cold current from the Kuriles, which renders the climate foggy in summer and retards cultivation. The rainfall, which varies much in different years, is on an average 62 inches. No month passes without rain; but it is most plentiful in summer.

Mineralogy.—The mineral resources of Japan are considerable. Gold, silver, copper, iron, lead, antimony, tin, sulphur, coal, basalt, felspar, greenstones, granites (red and gray), rock crystal, agate, carnelian, amber, scoriæ and pumice stone, talc, alum, etc., are found in greater or less quantities. Coalbeds extend from Nagasaki to Yezo, near Sapporo, in Yezo.

Production and Industry.—About three-fifths of the land is cultivated by peasant proprietors, and the remaining portion by tenants. In 1919 about 30,000,000 acres were owned by private persons, of which about 10,000,000 were under cultivation. The leading agricultural crops are rice, wheat, barley, rye, tobacco, and tea. The production of rice in 1918 was 34,187,000 quarters; of wheat, 4,053,420 quarters; of barley, about 5,000,000 quarters; of rye, about 5,000,000 quarters; of tobacco, about 850,000 quarters; and of tea, about 765,000 hundredweight. The total number of horses was about 1,300,000, and of cattle about 1,600,000. The chief mineral products in 1918, with their values, were as follows: gold, 10,240,591 yen; copper, 90,390,232 yen; steel, 113,619,943 yen; pig iron, 38,091,576 yen. Other products of importance are coal, 286,032,425 yen; petroleum, 30,479,097 yen; sulphur, antimony, and iron pyrites. There were about 250,000 men employed in collieries, and about 170,000 in metal mines.

Government and Administration.—The government is a hereditary monarchy, the succession being now exclusively in the male line. The cabinet consists of 9 ministers of state, presided over by a minister president, their departments being Foreign Affairs, Home Affairs, Interior, Finance, War, Navy, Justice, Education, Agriculture and Commerce, Communications (post and telegraph, etc.). There is also a privy-council, mostly composed of former ministers of state. The constitution, laid out on German lines, is jealously careful of the supremacy of the throne. The imperial diet consists of two Houses, and its approval is necessary for the passing of every law, debates being held in public. The first general election took place in 1890; provincial assemblies were instituted in 1879. For administrative purposes Japan is divided into *ken* or prefectures and *fu* or city governments.

Railways.—The railway system began with two lines, one from Tokyo to Yokohama, and the other from Hyōgo to Osaka and Kyōto. In 1877 a great impetus was given to railway construction by the formation of private companies. There were in 1919 5,999 miles of state railway, 1,835 miles of railway owned by private companies, or a total of 7,834 miles. In 1920 the construction of five railway lines in Manchuria and Mongolia was begun.

Education.—Elementary education is compulsory. There are about 7,500,000 pupils in the elementary schools, and about 165,000 teachers. In special technical schools there are about 400,000 pupils, with about 6,000 teachers. The total number of children of school age is about 10,000,000. There are four universities, Tokio Imperial University, Kyoto Imperial University, Tohuku Imperial University, and Kyushu Imperial University. In these universities there are about 10,000 students, with about 900 instructors. Beginning in 1919–20, the government devoted 44,000,000 yen to extend higher education. There is a special education system in Formosa.

Army and Navy.—See ARMY; NAVY.

Finance.—The estimated revenue for the year ending March 30, 1920, was 1,064,190,340 yen. The chief revenues are derived from taxes, from state property, post and telegraphs, and from monopolies. The chief expenditures are for administration, education, and communication. The public debt on March 31, 1919, was 2,579,946,478 yen.

Religions.—There are two prevailing religions in Japan—*Shintô* or *Kami no Michi* ("The way of the gods"), the indigenous faith; and Buddhism, introduced from China in 552. (1) Shintôism: The characteristics of Shintôism in its pure form are "the absence of an ethical and doctrinal code, of idol worship, of priestcraft, and of any teachings concerning a future state, and the deification of heroes, emperors, and great men, together with the worship of certain forces and objects in nature." The principal divinity is the sun goddess Amaterasu, from whom the Mikado is held to be descended. (2) Buddhism: Of Buddhists there are no fewer than 35 sects. The monks have assumed the functions of priests, and Japanese Buddhist worship presents striking resemblances to that of the Roman Catholic

Church. Buddhism is still the dominant religion among the people. Full toleration is extended to all forms of religious belief, in so far as they do not conflict with the peace and order of the community. Francis Xavier introduced Christianity in 1549, but his work was extinguished in blood, till scarcely a trace of it was left. Of the Protestant missions

SHINTÔ PRIEST, JAPAN

the Presbyterians, five sects working together, and the American Congregationalists are the most flourishing. The American and Canadian Methodists, the Baptists, Episcopalians, and others are also actively at work.

Manufactures.—The latest industrial census was made in 1917. There were 20,966 factories employing more than 10 hands each. The total number of employees was 1,280,964. The chief manufactures were woven goods, silk goods, woolen goods, Japan paper, European paper, matches, earthenware, matting, oil, knitting products, etc. There were 9 sugar factories in 1918. The products were valued at 75,935,000 yen.

COMMERCE.—The total imports in 1917 were valued at £217,331,933, and the exports at £209,887,261. The chief imports were from the United States, British India, China, and Great Britain. The chief exports were to the United States, China, Great Britain, British India, and France. The chief imports in 1919 were raw cotton, 667,866,651 yen; rice, 162,220,404 yen; iron bar, wrought plates, etc., 156,579,108 yen. Other imports of importance were sugar, beans and peas, wool, machinery, coal, flax and hemp. The chief exports were raw silk, 623,919,491 yen; cotton tissues, 280,061,883 yen; silk manufactures, 101,539,277 yen. Other exports of importance were cotton yarn, coal, matches, earthenware, refined sugar.

History.—The reputed founder of the present dynasty was Jimmu Tennō, who ascended the throne in 660 B. C. The legendary epoch continues for more than 1,000 years, and all Japanese history before A. D. 500 is to be classed as legendary. In A. D. 201 the Empress Jingō is said to have invaded and conquered Korea, and this expedition was followed by the introduction of Korean civilization, the sacred Chinese books "Rongo" and "Senjimon" arriving from Korea in 285. In 552 Buddhism was introduced from Korea, and became 40 years later, the established religion. In 624 a Buddhist hierarchy was established by government. Shortly before this direct relations had been entered upon with China, and Chinese civilization was thereafter rapidly assimilated. At one time (1333–1392) two puppet-dynasties held sway, the North and the South, to one or the other of which the feudal barons rallied. The shôgunate, made powerful by Yoritomo, itself fell into abeyance, but the military genius and astute policy of Hideyoshi, who died in 1598, prepared the way for its revival in 1603 by Tokugawa Iyeyasu, the illustrious general and statesman who gave a lasting peace to Japan. The Portuguese, who first landed in Japan in the year 1543, carried on a lucrative trade; but by-and-by the ruling powers took alarm, and ordered away all foreigners, and interdicted Christianity (1624), believing that foreigners impoverished the country, while their religion struck at the root of the political and religious systems of Japan. The Portuguese continued to frequent Japan till 1638, when they and their religion were finally expelled. From this date the Japanese government maintained the most rigid policy of isolation, till 1853, when they were rudely awakened from their dream of peace and security by Commodore Perry steaming into the harbor of Uraga with a squad-

ron of United States war vessels. He extorted a treaty from the frightened Shôgun, March 31, 1854, and Japan, after a withdrawal of 216 years, entered once more the family of nations. Other countries slowly followed the example of the United States till 16 in all had obtained the same privileges.

The assassination in 1877 of Okubo, chief of the party whose reforms gave rise to the Satsuma rebellion, was followed 12 years later by the assassination of Viscount Mori, a cabinet minister.

The court no longer live in seclusion. The emperor and empress have visited all the chief institutions and are present at public spectacles. The crown prince, Haru, was the first in the long dynasty to be educated at a public school. A new nobility was created in 1884, drawn partly from the old feudal baronage and partly from the new men of 1868, who send representatives to the newly created Upper Chamber. The nation is itself divided into three classes, *Kwazoku* ("nobility"), *Shizoku* ("gentry"), and *Heimin* ("commonalty"). Officials are of four classes, *shinnin, chokunin, sōnin,* and *hannin.* Officials constitute the flower of the nation; class jealousy is absent, careers being open to the poorest. The main results of the triumphant war with China in 1894–1895 were the war indemnity, and the acquisition of For-

TEMPLE AT YEYASOU, JAPAN

mosa. Japan was visited by a terrible earthquake in 1892; and in June, 1896, an earthquake wave cost 10,000 lives. From 1897 to 1900 the question of Korea was warmly debated between Japan and Russia. On Jan. 8, 1904, war broke out between Russia and Japan, and this was terminated by the treaty of Portsmouth Sept. 5, 1905. The losses of Russia, dead and prisoners, were 388,500, and of Japan, 167,500, and of ships, Russia 83, of Japan 12. The treaty was unexpect-

edly favorable to Russia notwithstanding.

The success of Japan in the Russo-Japanese War made her one of the leading world powers. The war, however, produced a financial stringency which led to economic disturbances for years following. The international relations also caused difficulty and several times threatened a break with the United States. This was chiefly the result of the passage of legislation in California and other States debarring Japanese laborers. In 1906 the school board of San Francisco ordered the segregation of Japanese children. The problem was temporarily solved by the arrival at a so-called gentlemen's agreement, by which Japan agreed to restrict the immigration of Japanese laborers to the United States. In 1905 an alliance was made with Great Britain for the purpose of preserving the peace of eastern Asia and maintaining the integrity of China, and defending the rights of both countries in the region of eastern Asia and India. In 1911 this treaty was renewed for 10 years. As a result of the Russo-Japanese War, the interest of Japan was recognized as paramount in Korea, and the latter country practically became a province of Japan. In 1909 Prince Ito, the famous Japanese statesman, was assassinated by a Korean patriot. In the year following Korea was formally annexed to Japan, and was renamed Chosen. There were during the years following almost continual political outbreaks in Korea against Japanese government. In 1913 the relations between the United States and Japan again became estranged as a result of the passage in California of the Alien Land Owner's Law which excluded from the right to own land all aliens who are not eligible to American citizenship. As the Japanese are prohibited from becoming naturalized citizens, it was apparent that this legislation was aimed directly at them. The government of Japan protested vigorously. President Wilson attempted to prevent the passage of the law but was unsuccessful.

The outbreak of the World War brought Japan into conflict as an ally of Great Britain. On Aug. 19, 1914, the British representative at Berlin presented an ultimatum commanding that all German warships should at once be withdrawn from Chinese and Japanese waters and that the entire German concession of Kaiochow be given up by Germany before Sept. 14, 1914, "with a view to the eventual restoration of the same to China." The German Government refused and Japan declared war on Aug. 23, 1914. Two days later diplomatic relations between Japan and Austria-Hungary were broken. The Japanese navy at once established a blockade of Tientu, the principal town in the German concession, and at the same time began military operations. Later in September the Japanese Expeditionary Force, assisted by East Indian troops, began the siege of Tsing-tau. On Nov. 7, 1914, the Germans surrendered. Japan, with equal promptness, captured some of the Far Eastern German colonies, restricting her activities to the smaller German islands. These included the Marshall Island, the Ladrones, the east and west Caroline archipelago. This constituted the chief military activities of Japan during the war. Following the Russian revolution, however, Japanese troops were sent into Siberia and carried on more or less active campaigns there during 1918–19. See RUSSIA.

By the terms of the Peace Treaty, Japan received all the rights formerly possessed by Germany in the Shantung peninsula. This disposition of Shantung was strongly resisted by many of the representatives at the Peace Conference, but they were obliged to yield on the assurance of Japan that it was her intention to return the Shantung peninsula to China. China strongly protested against the arrangement and throughout 1920 attempted to bring the question of Shantung to an issue, but without success. Japan suspended hostilities with the so-called Soviet Republic of Siberia on July 15, 1920, and later occupied the northern half of the island of Saghalien after extending the Anglo-Japanese treaty for another year. The troops withdrawn from Siberia were sent into Korea, where all efforts to independence were suppressed with a strong hand.

JAPAN, to coat wood, metal, or paper with a thick coat of hard brilliant varnish. Japanning involves the baking of the varnished article. The Japanese employ a lacquer obtained from a tree (*Rhus vernix*) by making incisions in the trunk and collecting the juice; this is at first like cream, but becomes black by exposure to the air. Their process is said to be as follows: After the juice has assumed a deep black color, finely pulverized charcoal is added to it. The lacquer is applied to an article in several successive coats, each being dried in the sun before the next is put on. It soon becomes extremely hard, and is polished with a smooth stone and water until it becomes as smooth as glass. On this surface ornaments and figures are traced with a brush dipped in a varnish of

boiled oil and turpentine. Before this is quite dry, gold or silver leaf is laid on, and the whole afterward receives a finishing coat of varnish.

JAPANESE CEDAR, or Cryptomeria, a coniferous tree of China and Japan.

JAPHET (jā'fet), according to the Hebrew record, the second son of Noah, whose descendants peopled first the N. and W. of Asia, after which they proceeded to occupy the "isles of the Gentiles." The term Japhetic or Japetic was at one time used loosely for peoples of the European stock (nearly as Aryan and Indo-European now) as opposed to Semitic and Hamitic (Asiatic and African).

JAPONICA, a very handsome Japanese plant, a species of the camellia. It has become domesticated in the United States, and is notable for its large red or white flowers.

JAPURA, an important tributary of the Amazon, rises in Southern Colombia, on the E. side of the Andes, and enters the Amazon opposite Teffe by several arms. Its upper course is broken by many falls, but in the lower part it is navigable for river steamers to nearly lon. 70° W. or almost 500 miles.

JAQUES-DALCROZE, ÉMILE, a Swiss musician. Born 1865 and educated by R. Fuchs, Anton Bruckner, and Leo Delibes. Professor of Harmony at the Conservatoire, Geneva, 1892–1910, principal of Jaques-Dalcroze College at Hellerau-Dresden, 1910–14, and principal of the Institute Jaques-Dalcroze, Geneva, since 1915, and visiting principal of the London School of Dalcroze Eurhythmics. His works include: For soli, chorus, and orchestra, "La Veillée"; "Poème Alpestre"; "Festival Vaudois"; "Fête de Juin"; "Lyric Comedies"; "Janie"; "Sancho Panza"; fragments of an opera, "Le Violon maudit"; Le Bonhomme Jadis"; "Evocation"; "Les Premières Souvenirs."

JARGONELLE, a variety of early pear, of fine quality, so called from resembling in color the mineral jargon.

JARNAC (zhär-näk'), a small town of France, on the Charente, 16 miles from Angoulême. Here the Huguenots were defeated by Henry d'Anjou, afterward Henry III., March 13, 1569. The Prince de Condé fell in this battle.

JAROOL (jä-röl'), in botany, *Lagerstromia reginæ*, common in the Indian peninsula and in Burma. It yields a blood-red wood, which, though soft and open in the grain, is greatly used in India for boat-building and for the knees of ships on account of its great durability under water. The native Indian physicians esteem its various parts medicinal, the astringent root being used in thrush, its bark and leaves as purgatives, and its seeds as a narcotic.

JAROSLAV (yär-ō-slaf'), capital of the Russian district of that name; at the junction of the Volga with the Kotorost, 173 miles N. E. of Moscow. The town has broad streets, a fine quay, 2 miles long, beside the Volga, nearly 50 churches, three monasteries, and a theological college; it is the seat of an archbishop. The staple industry of the place is the manufacture of cotton stuffs; next comes the weaving of linen, wool, and silk. Jaroslav is an important river-port, and does an active trade in corn and textiles. Pop. about 120,000. The town was founded in 1026, and was the capital of an independent principality till 1471, when it fell to Moscow. The district of Jaroslav, with an area of 13,723 square miles, pop. about 1,500,000, is industrially important, with spinning and weaving of cotton and flax, and the manufacture of spirits, tobacco, and chemicals.

JARRAH, a timber tree of Australia, the *Eucalyptus marginata* (or *rostrata*), yielding a very durable wood, useful for railway sleepers, jetties, etc., not being liable to the attack of the white ant and the shipworm.

JARROW, a seaport of Durham, England; on the Tyne; 7 miles E. of Newcastle. Its growth from a small colliery village to the thriving town has been due to the construction of its docks (since 1859), and to the establishment of Palmer & Co.'s iron shipbuilding and marine engine works, blast furnaces, iron foundries, gun factory, etc., which employ many thousands of men. At Jarrow in 682 Benedict Biscop founded the Benedictine monastery with which the name of Bede is inseparably associated. Pop. (1918) 33,732.

JASHER, BOOK OF, one of the lost books of the ancient Hebrews, which is quoted twice (Josh. x: 13: II Sam. i: 18). Regarding its character and contents there has been much speculation. Talmudic and later Jewish authorities identified it variously with Genesis (sometimes called "the Book of the Upright"), Deuteronomy, Judges, etc., to all which notions there is the obvious and fatal objection that the two quotations from it which survive are not to be found in any of these books, and could not possibly be found in the first two, as they

refer to incidents which occurred at a subsequent period in the national history. The conjecture of the Syriac and Arabic translators has been adopted by Dr. Lowth, Herder, and other scholars—viz. that the Book of Jasher was a collection of national ballads, recording the warlike deeds of the national heroes or singing the praises of otherwise celebrated men. The actual book could not have been earlier than the age of Solomon, especially if a fragment relating to the building of the temple in the Septuagint of I Kings, viii. be from that work.

JASHPUR, a native State of Chota Nagpur, in Bengal; area, 1,963 square miles. The country is a tableland, ranging from 2,200 to 3,500 feet in height, and has excellent soil.

JASMIN, JACQUES (zhäs-ma*ng*), a Provençal poet; born in Agen, Lot-et-Garonne, France, March 6, 1798. His origin was of the humblest, and he earned his livelihood as a barber. He wrote: "Curl Papers," "Souvenirs," and a narrative poem "Francounetto." He developed the possibilities of the language of Provence as a medium of modern literary expression. He died in Agen, Oct. 4, 1864.

JASMINE, or **JASMIN**, the English name of the genus *Jasminum*, and especially of the common species *J. officinale*. It has opposite pinnate leaves, a four or five cleft white, sweet-scented corolla. Its native country was perhaps Persia. The jasmine of the shops is furnished by *J. officinale* and *J. grandiflorum*. A similar perfume exists in *J. sambac; J. undulatum* has slightly bitter leaves. The root of *J. pubescens* is regarded as alexiteric. The roots of *J. humile* furnish a yellow dye.

Oil of jasmine, an oil obtained from the flowers of *Jasminum grandiflorum, J. sambac*, and *J. officinale*.

Otto of jasmine, a pomade made by impregnating suet with the scent of jasmine, and leaving it for a fortnight in pure rectified spirit.

JASON, in classic fable, a Greek hero; son of Æson, King of Iolchos, a city of Thessaly. Peleas having usurped the throne on the death of Æson, the youthful prince was driven from his kingdom. Subsequently in obedience to the commands of the oracle, Jason returned to the city of Iolchos and demanded the surrender of the throne to him, its rightful possessor; to this the usurper consented, if Jason would first sail across the Euxine to the kingdom of Colchis, and there punish the perfidious king, Ætes, who had slain a mutual relative. With this Jason complied, and taking a troop of Greeks set sail in the ship Argo, for Colchis. Ætes promised to restore the Golden Fleece, (the cause of the kinsman's death,) and afford him every satisfaction if he would tame certain savage bulls, with brazen hoofs and horns, and make them plow a field sacred to the gods. At the same time he was to do some other services, such as killing the dragon who guarded the Golden Fleece, and, finally to finish all his tasks in one day. By the aid of Medea, the king's daughter, an enchantress, to whom he promised eternal love, Jason was enabled to accomplish his several feats, and returned to Thessaly with the Golden Fleece and his wife Medea. Growing, however, weary of her exacting love, Jason divorced Medea and married Glauce, the King of Corinth's daughter. In revenge Medea destroyed her own children by Jason, and sent to Glauce a poisoned garment which burned her to death. Jason was killed soon after, by a beam falling on him from the ship Argo, as he slept one day on the shore by his beloved vessel.

JASPER, a mineral of the quartz family, which occurs in the form of rocky masses, often making up large portions of hills of considerable size. In hue, it is of various shades of red, yellow, brown, and green, and sometimes arranged in stripes, when it is called ribbon jasper. Its varied colors are generally derived from iron in different degrees of oxidation. Jasper is much used for ornamental purposes, on account of its hardness and susceptibility of taking a high polish. Bloodstone, or heliotrope, is a deep green variety of jasper, with blood-red spots. Touchstone is a velvet-black flinty variety, used for testing the purity of gold alloys. The alloy is rubbed on the stone, so as to leave a metallic streak, and the quality is estimated by the brightness of the color when nitric acid is washed over it. The principal deposit of jasper is the gorge of the Kargon, in Siberia.

This gem, the 12th in the breast-plate of the Jewish high-priest (Exod. xxviii: 20), 1491 B. C., was esteemed by the Greeks and Romans.

JASSY, or **JASHI**, the capital of Moldavia, the N. division of Rumania. The town was almost destroyed by fire in 1827, after which it was rebuilt. The most noticeable secular buildings are the palaces of the boyars or Rumanian nobles, both in the city and in its environs. The town has a university with about 40 teachers and 170 students. Pop. about 76,000, of whom 50,000 are Jews, the

rest being Armenians, Russians, gypsies, etc. Jassy was the residence of the Moldavian princes from 1565. Here peace was concluded between Russia and Turkey in 1792. During Ypsilanti's insurrection the town was almost destroyed by the Turkish Janizaries (1822). On a height close to the town is the residence of the former woiwodes or governors of Moldavia. Jassy became the seat of the Government in 1916, after the Germans captured the capital, Bucharest.

JASTROW, JOSEPH, an American psychologist, born in Warsaw, Poland, in 1863. He removed to the United States and graduated from the University of Pennsylvania in 1882. After post graduate studies at Johns Hopkins University, he was appointed professor of psychology at the University of Wisconsin in 1883. In 1900 he was president of the American Psychological Association. He published many works on psychology and was considered an authority in that branch of learning. His principal writings include "Fact and Fable in Psychology" (1900); "The Subconscious" (1906); "Character and Temperament" (1915); "Psychology of Conviction" (1918).

JASTROW, MORRIS, an American educator; born in Europe, Aug. 13, 1861; was graduated at the University of Pennsylvania in 1881 and studied in Europe; accepted chair of Semitic Languages in the University of Pennsylvania; became a high authority on Semitic languages, religion and literature. He is the author of "Religion of the Babylonians and Assyrians" (1898); "A Fragment of the Babylonian Dibbarra Epic" (1891); "The Study of Religion" (1901); two grammatical treatises of "Abu Zakariyya Hayyug"; "Hebrew and Babylonian Traditions" (1914); "The Civilization of Babylonia and Assyria" (1915). He died on June 22, 1921.

JATROPHA, a genus of *Euphoribiaceæ*, tribe *Crotoneæ*. The seeds of *J. glandulifera* yield an oil highly esteemed as a stimulant application in rheumatism and paralysis. Taken internally, they are violently purgative, irritant, and poisonous. Those of *J. multifida* are also purgative, emetic, and poisonous. The expressed oil of *J. glauca* is used in India as an external application in chronic rheumatism and paralysis; the root of *J. officinalis* is given in Brazil in syphilis.

JATS, the most numerous and valuable section of the agricultural population of the Punjab, number about 5,000,000. They are by many identified with the Getæ; and some of the best authorities accept the theory that they are descended from Scythian invaders of India in prehistoric times. Some scholars believe them cognate with the gipsies.

JAUNDICE, an affection in which many tissues of the body are stained yellow, particularly the conjunctiva, skin, underneath the finger-nails, the urine, etc. It is caused by the coloring matter of the bile becoming absorbed into the blood from various morbid conditions of the liver, or the duodenal portion of the intestine, either from mechanical obstruction of the bile, or from suppression.

JAUNPUR, the capital of a district in the Northwest Provinces of India; on the Gumti, here crossed by a bridge (1569–1573) 712 feet in length. The former capital of a Mohammedan kingdom, Jaunpur has several splendid architectural monuments, including Ibrahim's baths (1420), mosques, and ruins of mosques and of the fort. Pop. about 30,000.

JAURÉS, JEAN LEON, a French journalist and Socialist leader, born in

JEAN JAURÉS

Castres, 1859, educated at the Lycée Louis le Grand and the École Normale Supérieure. He was appointed professor of philosophy in the University of Toulouse, where he remained till 1885, when he was elected to the Chamber of Deputies as a radical republican. Four years later, running for re-election, he

was defeated by a Monarchist candidate. Soon after he became famous as a Socialist speaker and as editor of the Socialist organ, L'Humanité, which he founded in 1904. He became internationally prominent when he joined Émile Zola, the novelist, in the defence of Captain Dreyfus and the exposure of the corruption in the French Army which made of Dreyfus a scapegoat. Jaurès was a continuous advocate of an agreement with Germany for mutual disarmament. He also, within the Socialist party, favored a general strike against war, but only on condition the strike was international, and not confined only to one of the belligerent countries. On July 31, 1914, he was assassinated in a café in Paris, by a fanatical patriot, because of his efforts to avert the impending war.

JAVA, an island of the Dutch East Indies; between St. Nicholas Point and South Cape S., and is washed on the N. by the Sea of Java, on the E. by the Strait of Bali, on the S. by the Indian Ocean, and on the W. by Sunda Strait; extends almost due W. and E. The extreme length is about 600 miles, the breadth 40 to 125 miles, the superficial area about 49,000 square miles, pop. about 35,000,000. Batavia, the capital had a pop. of about 230,000. The coast line is not much developed; a few large bays, protected by islands, furnish safe anchorage for vessels. From end to end of the island there is a mountain chain, named Gunung Kendang, and, especially in the W. part of the island, several parallel shorter chains. There are 43 volcanoes, several of which are still active. The rivers are generally small, but become torrents when swollen by rain; only a few of them are navigable. The climate depends on the altitude; it is rather hot and unhealthy on the coast, but pleasant in the hills.

The natives belong to the Malay race. The Madurese, in the E. part of the island, the Sundanese, living in the W. part, and the Javanese proper differ in physique and in language. Most of them are Mohammedans, at least in name, for much of the belief of their ancestors survives in the Islamism that is now practiced. A few tribes, however, profess the old religion (viz., the Baduwis in Bantam and the "Heathen" of the Tengger Mountains). The native Christians number about 12,000, and the Chinese Christians a few hundred. The inhabitants are more civilized than those of the other islands of the archipelago. There are 39 Dutch Protestant and 21 Roman Catholic clergymen for the whole of the Dutch East Indies, besides those who are working among the natives. Every form of religious belief is free, but proselytizing is strictly prohibited.

The chief wealth of Java consists in its luxuriant vegetation, though the production power seems to be now a little exhausted, at least to judge from the many diseases by which the plantations have been visited of late. The animal kingdom is not very rich; tigers, rhinoceros, deer, and wild swine are the chief representatives of the quadrupeds; there are only a few birds that are conspicuous for their plumage. Several species of serpents (some venomous) and crocodiles are found on the island.

The earliest historical references date back to the beginning of the 5th century. In A. D. 412 Fa-Hien visited Hindu colonies in Java. About the year 800 the intercourse of the Hindus with the island appears to have become more important. In 1808 the kingdom of Bantam was incorporated with the Dutch possessions; but these in 1811 became part of the French empire. In the same year Java was occupied by the English, and remained in their hands up to 1817. A short time after the Dutch had resumed possession of Java an insurrection burst out in Jokjakarta in 1825 under Dipa Negara, and the struggle lasted till 1830, when the chief of the rebels submitted to the Dutch authorities.

JAVARY, or **YAVARY**, a river flowing into the S. part of the Amazon and forming the boundary between Brazil and Peru. It is navigable throughout most of its course.

JAVA SEA, that portion of the Eastern Sea which lies between the island of Java to the S., Sumatra to the W., the islands of Banca, Billiton, and Borneo to the N., and the island of Celebes to the E. The width of the sea between Java and Borneo is 250 miles, and it is crossed by two approved routes to China, the one by the Straits of Macassar, and the other by Pitt's Passage.

JAVELIN, a light spear thrown by the hand, formerly used by horse and foot in ancient warfare. Also a hunting spear, about 5½ feet long, having a wooden shaft and an iron head. It is yet used in Europe in hunting the boar, and by many savage nations in ordinary hunting.

JAXARTES, now called SIHÛN, or SYR-DARIA, a river of Western Asia, which rises at an altitude of 12,000 feet, 30 miles S. of Lake Issik-kul, in the Tian-Shan Mountains. Its total length

is 1500 miles; area of its drainage basin, 320,000 square miles.

JAY, the popular name of *Garrulus glandarius*, a species of *Corvidæ*, of a vinous red color; the back pale gray; the rump and upper tail coverts white; the tail black or gray, with bluish-gray bars; the wing coverts light gray; the bastard wing or primary coverts barred with black or bright cobalt blue; head with an erectile crest; forehead white, streaked with black. Length about 13 inches. It is a beautiful bird, but attacks peas and other garden crops. It also eats worms, larvæ, and snails. It is often kept as a cage bird. The common blue jay, *Cyanocitta cristata*, is found over a large portion of North America. The green jay of the United States is *Xanthura luxuosa*. The long-tailed blue jays are also arranged under *Xanthura*, though they have not the yellow tail which the generic name suggests.

JAY, JOHN, an American statesman; born in New York City, Dec. 12, 1745; graduated at King's College (now Columbia University) in 1764; admitted to the bar in 1768. Elected to the 1st Continental Congress in 1774, and re-elected in 1775, he prepared addresses to the people of Great Britain and Canada, and to his own countrymen; drafted the constitution of New York State in 1777, and was appointed chief-justice of the State; was returned to Congress in 1778 and elected its president, and in the following year was sent as minister to Spain. In 1782 he was added by Congress to the peace commissioners, and it was mainly by his efforts that the treaty was brought to a conclusion on terms so satisfactory to the United States. In 1784–1789 he was secretary for foreign affairs. On the adoption of the National Constitution in 1789 he wrote in its favor in the "Federalist"; and after the organization of the Federal Government, Washington having offered him his choice of the offices in his gift, he selected that of chief-justice of the Supreme Court. In 1794 he concluded with Lord Grenville the convention familiarly known as "Jay's treaty," which provided for the recovery by British subjects of pre-revolutionary debts and by Americans of losses incurred by illegal capture by British cruisers, and the determination of the E. frontier of what is now the State of Maine; the British were to surrender the W. posts held by them in 1786, and there was to be reciprocity of inland trade between the United States and British North America. The treaty, though favorable to the United States, was passionately denounced by the Democrats as a surrender of American rights and a betrayal of France; but it was ratified by Washington in August, 1795. Jay was governor of New York from 1795 to 1801. Then, though offered his former post of chief-justice, he retired from public life, and passed the remainder of his days at his estate of Bedford, Westchester co., N. Y., where he died, May 17, 1829.

JEANNE D'ALBRÊT (zhän-dal-brā'), the Calvinistic mother of Henry IV. of France through whom he succeeded to Navarre and Béarn. She was born in 1528 and died in 1572.

JEANNE D'ARC. See JOAN OF ARC.

JEANNETTE, a borough in Pennsylvania, in Westmoreland co. It is on the Pennsylvania Railroad. It is an important industrial community having manufactures of window glass, tableware, rubber goods, etc. Pop. (1910) 8,077; (1920) 10,627.

JEAN PAUL. See RICHTER.

JEBB, RICHARD CLAVERHOUSE, a Scotch classical scholar; born in Dundee, Aug. 27, 1841. He was educated at St. Columba's College, Dublin, the Charterhouse, London, and Cambridge University, and was graduated as senior classic at Trinity College in 1862. In 1869 he became public orator of that university, and in 1875 he was called to fill the Greek chair in Glasgow University, which he resigned in 1889, on being appointed Greek Professor at Cambridge. His best known works are "The Attic Orators"; "Modern Greece"; a "Life of Richard Bentley"; "Homer: an Introduction to the Iliad and Odyssey"; and an edition of Sophocles. He died in 1905.

JEBIS, or **JEBISU**, the Neptune of Japanese mythology, specially revered by fishermen.

JEBUSITES, one of the chief tribes of the land of Canaan; they dwelt in the mountains to the W. of the Dead Sea, and to the N. of the Hittites. Their capital was Jebus, afterward called Salem; and, according to some, was the site, at a later period, of the city of Jerusalem.

JECONIAH, King of Judah, began his reign at the age of 18, about 599 B. C. He sat on the throne, however, only a short time, being carried prisoner to Babylon by Nebuchadnezzar, when the latter took Jerusalem. He remained in captivity till the year 560 B. C., and was then placed by Evil-Merodach among the princes of his court. Zedekiah, his brother, succeeded him.

JEDDA, the port of Mecca, Arabia. On June 15, 1858, the fanatic Mohammedans massacred 26 of the Christian inhabitants, among them the English and French consuls and part of their families; but many fled to the shipping. On the delay of justice, Commodore Pullen, with the "Cyclops," bombarded the town. On Aug. 6, 11 of the assassins were executed; the ringleaders afterward.

JEDDO. See TOKYO.

JEFFERIES, JOHN RICHARD, generally known as RICHARD JEFFERIES, an English writer on rural subjects; born in Wiltshire, Nov. 6, 1848. He started life as a journalist on the staff of the "North Wilts Herald" about 1866, and won his first real success with "The Gamekeeper at Home"; describing rural life and the observations of a nature lover. Other books written in the same vein, or on similar subjects, are "Wild Life in a Southern County" (1879); "The Amateur Poacher" (1880); "Round about a Great Estate" (1881); "Nature near London" (1883); "Life of the Fields" (1884); "Red Deer" (1884); and "The Open Air" (1885). The book entitled "The Story of My Heart" (1883) is a strange autobiography of inner life. Jefferies possessed a wonderful insight into the habits and ways of animals and birds and creeping things, and a great love for nature. He died in Goring in Sussex, Aug. 14, 1887.

JEFFERSON, a river in Montana, about 200 miles long. It is formed by the union of the Beaver Head and Wisdom (or Big Hole) rivers in Madison co. It unites with the Madison and Gallatin to form the Missouri.

JEFFERSON, CHARLES EDWARD, an American clergyman and writer, born in Cambridge, Ohio, in 1860. He was graduated from the Ohio Wesleyan University in 1882 and after teaching school for several years he entered the Congregational ministry in 1887 and for ten years following was pastor of the Central Church, Chelsea, Mass. In 1898 he was chosen pastor of the Broadway Tabernacle in New York City. He wrote much on religious and social subjects. His writings include "Doctrine and Deed" (1902); "The Minister as Prophet" (1905); "The Old Year and the New" (1907); "The Cause of the War" (1914); "A Fire in the Snow" (1916); "Forefathers' Day Sermons" (1917).

JEFFERSON, JOSEPH, an American comedian; born in Philadelphia, Pa., Feb. 20, 1829. He came of a theatrical stock, his great-grandfather having been a member of Garrick's company at Drury Lane, while his father and grandfather were well known American actors. Jefferson first appeared on the stage at the age of three, as the child in "Pizarro," and a year later gave an imitation of "Jim Crow" Rice.

For many years he went through the hard training of a strolling actor, and then played in New York, where in 1857 he made a hit as Doctor Pangloss, and in 1858 created the part of Asa Trenchard in "Our American Cousin," Southern playing Lord Dundreary. In 1865 he visited London, and at the Adelphi Theater played for the first time his world-famous part of Rip Van Winkle, Sept. 4, 1865. With this character his name is identified, though he showed himself as a supreme artist as Bob Acres in "The Rivals" and in other fine old English comedies. He died April 23, 1905.

JEFFERSON, THOMAS, an American statesman, 3d President of the United

THOMAS JEFFERSON

States; born in Shadwell, Va., April 2, 1743. He received a liberal education for that time, graduating at William and Mary College in 1764. He was admitted to the bar in 1767. In 1769 he was sent to the Virginia House of Burgesses, where he gained local fame by a speech supporting the emancipation of slaves. In 1774 the Burgesses were dissolved by Lord Dunmore, the governor, but met on their own responsibility, and sent delegates to the Colonial Congress. Jefferson being elected but unable to go, sent a "Summary View of the Rights of British North America," for which he was nearly attainted of treason in Parliament.

Jefferson was a member of the 2d Congress, in 1775, and of the 3d, in 1776. He was appointed chairman of a special committee of five, to prepare a declaration of independence. Jefferson wrote the draft, and it was adopted by the committee, with very few changes, to become one of the immortal documents of history. He resigned his seat in Congress to assist in framing the Virginia constitution. In 1779 he was elected governor of Virginia. In 1783 he was returned to Congress, where he secured the adoption of the decimal system of coinage, and assisted in other important measures. In 1784, with Franklin and Adams, he was instrumental in making important treaties with Prussia and Morocco. In 1785 he was made minister to France, where he served during the stormiest period of the French Revolution. The liberal and destructive spirit of that revolution had great influence upon him, and his subsequent views and acts were more or less shaped by it. He floated the French tricolor at his home at Monticello, and greeted his neighbors with the title "citizen." In 1789 he was made Secretary of State by Washington. Here he was recognized as the leader of the Republican party, the other members of the Cabinet and Washington himself being Federalists. In 1794 he retired to his estate, and passed three years in study and leisure. In 1797 he was chosen Vice-President with Adams, and in 1801 was elected President by the House of Representatives. In 1805 he was re-elected. His administrations were marked by the war with Tripoli, the admission of Ohio to the Union, the purchase of the Louisiana Territory, the naval episode between the "Chesapeake" and the "Leopard," the Embargo act, the trial of Aaron Burr for treason, and the prohibition of the slave trade. In 1809 he retired finally to private life, where he devoted himself to study and to philanthropic enterprises, his chief undertaking being the establishment of the University of Virginia. He was steadily democratic in his views, and a champion of the rights of the States, as against centralization in government. He died in Monticello, Va., July 4, 1826, on the same day of John Adams's death, and the 50th anniversary of the famous Declaration that he had penned.

JEFFERSON CITY, a city, capital of the State of Missouri, and county-seat of Cole co.; on the Missouri river, the Chicago and Alton, the Missouri, Kansas and Pacific and the Missouri Pacific railroads; 125 miles W. of St. Louis. It is the farming and manufacturing trade center for Cole and adjacent counties; has manufactories of flour, shoes, farming implements, and wagons, and iron foundries. It has the State Capitol, St. Mary's Hospital, Lincoln Institute, and other public buildings. It has gas and electric light plants, a National bank, daily, weekly, and monthly periodicals. Pop. (1910) 11,850, (1920) 14,490.

JEFFERSONIA (-sō'-) (named in honor of President Jefferson), a genus of plants, order *Berberidaceæ*. The species *J. diphylla*, the twin-leaf, or rheumatism-root, is found in woods from Western New York to Wisconsin and S. The leaves, which are only two and bipartite, rise immediately from a horizontal root-stock borne on long petals, and enfolding a handsome white flower, not unlike that of the blood-root, and appearing in April and May. This plant has in the West the reputation of being a stimulant, diaphoretic, and antispasmodic.

JEFFERSONVILLE, a city and county-seat of Clark co., Ind.; on the Ohio river, and the Baltimore and Ohio Southwestern, the Pittsburgh, Cincinnati, Chicago and St. Louis, and several other railroads; 50 miles E. of Evansville; and opposite Louisville, Ky., with which it is connected by railroad bridges. It contains the Southern State Penitentiary, High School, Public Library; is the seat of an extensive government depot of supplies; and has waterworks, gas and electric lights, street railways, large car works, National banks, daily, weekly, and monthly periodicals. Pop. (1910) 10,412, (1920) 10,098.

JEFFREY, FRANCIS, a British critic and essayist; born in Edinburgh in 1773. After graduating at the universities of Glasgow, and Oxford, Jeffrey, in 1794, was admitted to the Scottish bar. In 1802 he became editor of the Edinburgh "Review." In 1813 he married a grand-niece of John Wilkes, crossing to the United States to bring her home. From 1816 till he ceased to practice Jeffrey was the acknowledged leader of the Scottish bar. He died in 1850.

JEFFREYS, or JEFFERIES, GEORGE, LORD, an English jurist; born in Acton, England, in 1648. By attaching himself to the Duke of York he obtained the appointment of Welsh judge, the honor of knighthood, and the chief-justiceship of Chester. In 1683 he was appointed Chief-Justice of the King's Bench, and, in 1685, Lord Chancellor. His cruelties on the Western circuit toward the deluded followers of the Duke

of Monmouth were excessive; earning for him among the people the title of "Bloody Jeffries." His acts, however, pleased his royal master James II. He died a prisoner in the Tower of London in 1689.

JEHOAHAZ, one of the idolatrous Kings of Israel, who succeeded his father, Jehu, in the sovereignty, 857 B. C. His iniquitous courses led to his defeat and humiliation; his country being invaded by the armies of Syria. After a wicked and stormy reign of 17 years he died, 840 B. C. Also the name of a King of Judah, commonly called the younger, a son of Josiah, who, obtaining a party, usurped the throne to the exclusion of his elder brother; his short reign of a few months, however, was brought to a close by his capitivity, and committal as a close prisoner to Egypt.

JEHOIAKIM (jē-hoi'ä-kim), a King of Judah, advanced to the throne of Judah 608 B. C. as a tributary of Pharoah Necho, King of Egypt, to whom, as the price of his elevation, he gave 500 talents of silver and one talent of gold. Though admonished by the prophet Jeremiah to walk in the paths of virtue, Jehoiakim relapsed into idolatry and wickedness. His pride brought down upon himself and unfortunate country the vengeance of the Babylonian king, Nebuchadnezzar, who besieged Jerusalem, rifled the temple and leaving the humiliated king as his tributary on the throne returned to Babylon carrying with him some of the principal inhabitants of Jerusalem, the youthful Daniel being among the captives. He died in 597 B. C.

JEHOL, (yā'hol), or **CHING-TE-FU** (-fö), a city of inner Mongolia, containing a summer residence of the Emperor of China.

JEHOSHAPHAT, King of Judah, ascended the throne at the age of 35, in succession to his father, Asa, 914 B. C. During the early part of his reign his people prospered, but having entered into an alliance with Ahab he suffered many disasters, which were at length averted by prayer and fasting; and henceforth his reign was happy. He died 889 B. C., leaving his crown to his son Jehoram.

JEHOSHAPHAT, VALLEY OF, the valley of the judgment of God, a metaphorical name of some place where God would judge the foes of His people (Joel iii: 2, 12). The name has been appropriated to the deep and narrow glen E. of Jerusalem, running N. and S. between the city and the Mount of Olives, called in the Bible the brook Kedron.

JEHOVAH, the most sacred of the names given in the Old Testament to the Supreme Being, regarded also as the God specially of the Jewish people. So holy was the name deemed that the Jews were afraid to allow it to escape their lips, and therefore took means intentionally to mispronounce it by altering its vowel points to those of Adonai, or, when the two occur together, of Elohim, less sacred names for God. This practice arose from their having misinterpreted such passages as Deut. xxviii: 58; Lev. xxiv: 11, 15, 16; Exod. xx: 7. What the real vowel points, and consequently the proper pronunciation, should be is now doubtful. Many critics contend for Hebrew, *Yahveh*, some for *Yahvah*, and some for *Yahavoh*. It is generally derived from *havah*, an old form of *haiah* = He is. The import of the name is explained in Exod. iii: 14. "I am that I am," or "I am," thus predicating self-existence or existence in a sense in which it can be applied to no created being. In Exod. vi: 3 we read that God appeared to Abraham, Isaac, and Jacob by the name of God Almighty, but was not known to them by the name of Jehovah. The meaning may have been that the patriarchs did not properly realize the depth of meaning in the name, for the word occurs in Gen. xiv: 22, xxvi: 22, xxviii: 16. Elohim stands for God as the creator and ruler of the universe (Gen. i: 1); Jehovah as a being standing in the most intimate relation to the Jewish people as their theocratic ruler and God (Psalm cxxxv: 4), as supreme above all gods (verse 5), the First and the Last (Isa. xli: 4), nay, the only true God (xliv: 5, 8).

JEHU, the 10th King of Israel; had been commander in the army of Jehoram, his king, whom he shot with an arrow, and put to death 70 of Ahab's children, and the priests of Baal in the temple of their idol. Afterward relapsing into idolatry, he was punished by the delivery of his kingdom to Hazael, King of Syria. He died in 857 B. C.

JELELABAD (jel-a-lä-bäd'), or **JALALABAD** (jäl), a town of Afghanistan; 78 miles E. N. E. of Kabul, on the Peshawar route. A famous and successful resistance was made here in 1841–1842 by the British forces under Sir Robert Sale. Also the capital of Seistan, Southwest Afghanistan. Pop., est., 10,000. There are several towns of this name in British India.

JELLICOE, JOHN RUSHWORTH, VISCOUNT OF SCAPA, a British Admiral. He was born in 1859 and was educated at Rottindean. He entered

the navy in 1872, served in the Egyptian War of 1882, winning a Khedive's bronze star, and after becoming lieutenant won prizes at the Royal Naval College. While commanding a ship in 1893 he was wrecked off Victoria. He served in China in 1898–1901 and during that period commanded the Naval Brigade and acted as Chief of Staff to Vice-Admiral Sir E. Seymour during the attempted relief of the Peking Legations. In 1905–7 he was director of Naval Ordnance and was wounded at Peitsang.

ADMIRAL JELLICOE

Later Kaiser William conferred on him the Order of the Red Eagle, 2nd class (with swords) for services in China. He was made rear-admiral in 1907, and as such served in the Atlantic fleet in 1907–8. In 1908–10 he was lord commissioner of the Admiralty and controller of the Navy and in 1910–11 commanded the Atlantic fleet. In 1911–12 he commanded the Second Squadron Home Fleet, and in 1912–14 was Second Sea Lord of the Admiralty. During the European War he was in command of the Grand Fleet. He was present at the Battle of Jutland, May 31, 1916, which was the greatest naval engagement of the war. On that occasion he commanded the main fleet, composed of about 25 dreadnought battleships, and came to the assistance of Admiral Beatty shortly after the battle began. In 1915 he was created G. C. B., having in 1911 been made K. C. B. In 1916 he received the Order of Merit and has been Chief of the Naval Staff since 1917. He was made viscount at the close of the war.

JELLIFFE, SMITH ELY, an American neurologist, born in New York City, in 1866. He graduated from Brooklyn Polytechnic Institute in 1886 and from the College of Physicians and Surgeons in New York, in 1889. He took post graduate courses in Europe in 1903 and was appointed visiting neurologist at the City Hospital, New York. From 1903 to 1907, he was professor of mental diseases at Fordham University. He was also lecturer and professor of medical colleges and hospitals in New York. He became known as one of the leading experts in mental diseases. He paid special attention to psycho-analysis and became an authority on that subject. He was a member of many medical societies. He wrote "Morphology and Histology of Plants" (1899); "Outlines of Pharmacognosy" (1904). He also edited and translated the works of many foreign writers on medical subjects, and contributed many articles on psycho-analysis and other topics to medical magazines.

JELLY FISH, a name for bell-shaped or disk-like marine *Hydrozoa,* for the most part active swimmers. One set, known as *Acraspeda* or *Acalephæ,* are usually large, a giant specimen of *Cyanea,* had a bell 7½ feet across, and tentacles 120 feet long. Beset with myriads of stinging cells, these "blubbers" often make bathers more than uncomfortable. The common *Aurelia* is a well-known representative, while the exceptional *Lucernarians* have a more or less sedentary life attached to sea-weeds and other objects. Included among the craspedote *hydrozoa,* are the *Trachymedusæ,* of which *Geryonia* is a good type. Finally, a great number of medusoid forms, usually small in size, very closely resemble the *Trachymedusæ,* but differ both from them and from the *Acraspeda* in being the liberated sexual "persons" of hydroid or zoöphyte colonies.

JEMAPPES (zhuh-mäp′), a village in the Belgian province of Hainault. Here the French Republicans under Dumouriez, on Nov. 6, 1792, defeated the Austrians, which victory placed Belgium in the power of the French. The village stands on one of the richest coalfields of Belgium, and manufactures stoneware, glass, and chemicals. Pop. about 15,000. The village was occupied by the Germans in 1914. It was one of the

last places recovered by the Allies in 1918.

JENA (yā'na), a town of Germany, in the former grand-duchy of Saxe-Weimar; 12 miles E. of Weimar, on the Saale, a place of little importance except for its university, which was opened in 1558. It has (1915), 121 teachers, an anatomical theater, botanical gardens, zoölogical museum and other scientific collections, observatory, library of 275,000 volumes, and (1915), 1,666 students. On Oct. 14, 1806, the Prussians (70,000 men) under Prince Hohenlohe were defeated here by the French under Napoleon Bonaparte with 90,000 men. Pop. about 40,000.

JENGHIZ KHAN. See GENGHIS KHAN.

JENKS, JEREMIAH WHIPPLE, an American economist and writer, born in St. Clair, Mich., in 1856. He graduated from the University of Michigan in 1878. He took post-graduate courses in foreign universities. He was admitted to the bar in 1881 but did not practice law. For several years he taught Greek and Latin and German in Mount Morris College and from 1886 to 1889 was professor of political science and English literature at Knox College. He was professor of political science and social science at Indiana University from 1889 to 1901, and from that year to 1912 he was professor of political economy at Cornell University. From 1912 to 1917 he was professor of government and director of the division of public affairs in New York University. He became in 1917 research professor of government and public administration at that university. From 1899 to 1901 he acted as expert agent of the United States Industrial Commission on Investigation of Trusts and Industrial Combinations in the United States and Europe. He was also special commissioner of the War Department to investigate questions of currency and internal taxation, labor, and police in Oriental countries. He acted as special agent on currency reform in Mexico in 1903. In 1903 and 1904 he acted on the commission to reform currency in China. From 1907 to 1910 he was a member of the United States Immigration Commission. He was also a member of the High Commission in Nicaragua. In 1906 and 1907 he was president of the American Economic Association. He wrote many works on economic subjects, including "The Trust Problem," (1900); "Report on Certain Economic Questions in the English and Dutch Colonies in the Orient" (1902). He also edited many reports of the United States Industrial Commission. He compiled and edited many books on politics, government, and economic subjects. He contributed many articles to periodicals in these branches.

JENNE (jen'ne), a town of Central Africa, on the Niger, and on the road from Sego to Timbuctoo, from which it is distant about 280 miles. It is a place of considerable commercial importance, and in the shops may be seen printed muslins, scarlet cloth, hardware goods, and other articles of British manufacture. Pop. about 10,000.

JENNER, EDWARD, an English physician; born in Berkeley, Gloucestershire, in 1749. After many years devoted to the consideration of, and experiments made with, vaccine lymph (or fluid taken from a pustule on the teat of a cow), as a specific for smallpox, Jenner was for the first time, in 1796, enabled to satisfy many medical men that the lymph, when inserted under the skin of a patient of any age, acted as a prophylactic, or preventive of the disease known as smallpox. He died in 1823.

JENNER, SIR WILLIAM, an English physician; born in Chatham in 1815; was educated at University College, London, where he himself was professor (latterly of Practice of Medicine) from 1848 till 1879. He was appointed physician in ordinary to the queen in 1862, and to the Prince of Wales in 1863; was made a baronet (1868), K. C. B. (1872), G. C. B. (1893), F. R. S., president of the College of Physicians, etc. It was he who established the difference between typhus and typhoid fevers (1851). He died Dec. 11, 1898.

JEPHTHAH (jef'tha), one of the judges of Israel, who made a remarkable vow before he marched against the Ammonites, that if he proved victorious he would offer to the Lord the first living thing which should come to meet him on his return. This happened to be his only daughter, whom he is said to have sacrificed to fulfil his rash vow. But many learned writers contend that the daughter, instead of being sacrificed, was devoted to perpetual virginity.

JEPSON, EDGAR, a British novelist. He was born in London, and was educated at Leamington and Oxford. In 1889–93 he lived in the Barbados but returned to London where he has since chiefly lived. His first book "Sibyl Falcon," appeared in 1895. His other works include: "The Passion for Romance"; "Keepers of the People"; "On the Edge of the Empire"; "The Sentimental Warrior"; "The Dictator's

Daughter"; "The Admirable Tinker"; "The Horned Shepherd"; "Pollyooly"; "Garthoyle Gardens"; "The Night Hawk"; "Esther Lawes."

JERBOA (jer-bō'ä), a rodent mammal, with a body six inches long and a tail about eight, occurring in Egypt, Nubia, Arabia, and some other parts of Western Asia. They are lively little creatures, living in underground galleries in the desert.

JEREMIAH, the name of eight men mentioned in the Old Testament, the only very notable one being Jeremiah the prophet. He was of priestly descent, and born or resident at Anathoth, about 3 miles from Jerusalem. His father's name was Hilkiah. When called to the prophetic office, in the 13th year of King Josiah, B. C. 629 or 625, he calls himself a child. His prophetic life spanned the 11th of King Zedekiah, about B. C. 588, a period of 37 or 41 years. At that time Judah found itself between two powerful kingdoms, Babylon on the E. and Egypt on the S. Josiah espoused the Babylonian alliance, and lost his life fighting against the Egyptians. Jeremiah also was on the Babylonian side, and, when Jerusalem was taken by Nebuchadnezzar, Jeremiah was treated with kindness by the conqueror, being offered the option of an honorable position in Babylon or permission to remain in his own land. Jeremiah elected to stay, and found Gedaliah appointed ruler by the Chaldeans. On the murder of that governor the assassins and their sympathizers fled to Egypt, taking Jeremiah with them. Tradition says that he was put to death in Egypt for preaching against idolatry. He wrote two Old Testament books, the prophecies of Jeremiah and the Lamentations. Many rationalistic critics attribute to him also the book of Deuteronomy.

The Prophecies of Jeremiah.—One of the canonical books of the Old Testament, the second of the greater prophets. The several predictions are not in chronological order, though it is believed by some critics that an arrangement of another character is discernible. The concluding chapter, an historical one, is evidently from another hand—the Hebrew and Septuagint differ considerably. Jeremiah xxxi: 15 is quoted in the New Testament in Matt. ii: 18, and Jer. xxxi: 31–34, in Heb. viii: 8–12. The quotation from Jeremy the prophet in Matt. xxvii: 9 is now found only in Zech. xi: 12, 13.

JERICHO, a city of the Canaanites, in a plain on the W. side of the Jordan, near its mouth. It was destroyed by Joshua, rebuilt in the time of the judges, and formed an independent frontier fortress of Judæa. It was again destroyed by Vespasian, rebuilt under Hadrian, and finally destroyed during the crusades. The site of Jericho has usually been fixed at Rihah, a mean and foul Arab hamlet of some 200 inhabitants. Recent travelers, however, show that the probable location of Jericho was 2 miles W. of Rihah, at the mouth of Wady Kelt, and where the road from Jerusalem debouches into the plain. On the W. and N. of Jericho rise high limestone hills, one of which, the dreary Quarantana derives its name from the modern tradition that it was the scene of our Lord's 40 days' fast and temptation. Jericho was captured by British forces under Gen. Allenby in February, 1918.

JERICHO, ROSE OF, popular name of *Anastatica hierochuntina*, a genus of plants belonging to the order *Brassicaceæ*, or crucifers. It is an annual, inhabiting the Egyptian desert. It is so highly hygrometric that when fully developed it contracts its rigid branches so as to constitute a ball. Exposed then to the action of the wind, it is driven hither and thither. If, however, it be brought in contact with water, the ball-form vanishes, and the branches again acquire their natural expansion. It is said to have first bloomed on Christmas eve, and continued in flower till Easter; at its birth heralding the advent of the Redeemer, and immediately before its departure honoring His resurrection.

JEROBOAM, the 1st King of Israel, an officer in the service of Solomon, who had created him governor of the States of Ephraim and Manasseh. While fulfilling these offices it was predicted that he should yet rule over 10 instead of 2 of the tribes. Solomon, alarmed at the effect of such a report, sent out his officers to secure Jeroboam; but he, receiving timely warning, left his post and fled into Egypt, where, for the rest of Solomon's reign, he remained in retirement. On the death of that monarch, 977 B. C., and the revolt of the 10 tribes from the house of Judah, Jeroboam returned to his native land; and the revolted tribes having formed themselves into a separate kingdom, under the name of Israel, elected Jeroboam as their first king. After an unholy and idolatrous reign of 22 years he died in 954 B. C.

JEROBOAM II., King of Israel, and son of Joash, succeeded that king in 825 B. C. After some signal victories over the Assyrians he fell into the prac-

tice of idolatry and had his kingdom overrun by the Assyrians. The prophets Hosea and Amos predicted the downfall of his house.

JEROME, JEROME KLAPKA, an English author; born in Walsall, May 2, 1861. He wrote: "On the Stage—and Off" (1888), largely autobiographical; "Idle Thoughts of an Idle Fellow"; and a comedy, "Barbara." "Three Men in a Boat" (1889); "Paul Kelver" (1902); "The Passing of the Third Floor Back" (1907); "Cook" (1917), etc. He wrote also many successful plays. Gave readings in the United States in 1914.

JEROME, or **HIERONYMUS,** one of the fathers of the Church; born ab. 340, at Stridon, on the frontiers of Dacia. He was ordained a presbyter at Antioch, 378, and soon after went to Constantinople, where he lived with Gregory Nazianzen. In 382 he visited Rome and was made secretary to Pope Damasus; but three years afterward he returned into the East, accompanied by several female devotees who wished to lead an ascetic life in the Holy Land. His writings are very numerous, the most important being his Commentaries on various parts of the Bible. The Church owes to him the Latin translation of the Bible, well known under the name of the Vulgate. His style is singularly pure and classical. He died in 420.

JEROME OF PRAGUE, a Bohemian reformer; born about 1360. He was in faith and sufferings the companion of the famous John Huss. Together they made a vigorous crusade against the dissoluteness of the clergy, the worship of relics, etc. When Huss was imprisoned in Constance Jerome hastened to his defense, but was seized and carried thither in chains (1415). On May 30, 1416, he was burned at the stake, and his ashes thrown into the Rhine.

JERROLD, DOUGLAS, an English humorist and dramatist; born in 1803. After being for a short time a midshipman, he was bound as an apprentice to a printer in London. His play "Black Eyed Susan" produced in his teens had a prodigious success and is still acted in revised form. His other successful dramas include "The Rent Day," "Nell Gwynne," "Bubbler of a Day," "Time Works Wonders," and "Heart of Gold." He edited and wrote for periodicals. The celebrated "Mrs. Caudle's Curtain Lectures" were contributed to Punch. He was the first editor of "Lloyds Weekly Newspaper." He died in 1857.

JERSEY, the largest and most important of the Channel Islands, lying in the English Channel, and belonging to Great Britain. It is about 12 miles long and 7 miles wide. Pop. about 52,000.

JERSEY CITY, a city and county-seat of Hudson co., N. J., on the Hudson river, the Morris canal, and the Pennsylvania, the Erie, the Lehigh Valley, the New Jersey Central, the Baltimore and Ohio, the West Shore, the New Jersey and New York, the New York, Susquehanna and Western, and the Lackawanna railroads; opposite New York City, with which it is connected by ferries and tunnels; area 13 square miles.

Public Interests.—The business portion of the city lies in a level stretch along the river, about a mile in width. W. of this is an abrupt bluff, on which is the residential portion of the city. Jersey City is the second largest city in the State. It has trolley connections with Newark, Elizabeth, Hoboken, and other nearby cities. There is a public library, the Hasbrouck Institute, German American School, St. Aloysius Academy, St. Peter's Roman Catholic College, Christ's and St. Peter's Hospitals, and public high schools. The total assessed real estate valuation in 1920 was $139,075,028, and the bonded debt was $10,697,372. The budget for the same year was $13,710,539.

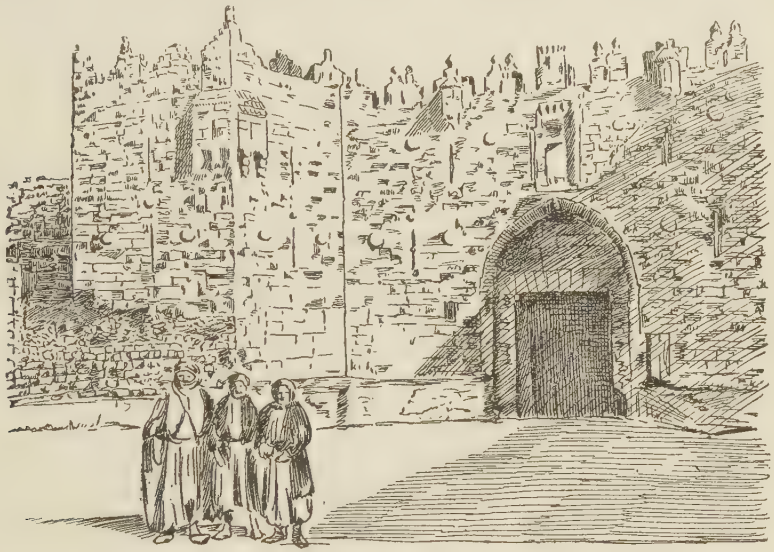
Business Interests.—The business interests of Jersey City are closely allied with those of New York City. Being the terminus of several large railroads and steamship lines, the commercial trade is very extensive. It has extensive stock yards, slaughter houses, grain elevators, and meat-packing establishments. Its manufactures are varied and extensive, and include iron and steel goods, machinery, locomotives, boilers, fireworks, furnaces, lead pencils, crucibles, silk, windmills, watches and jewelry, paints and chemicals, tobacco, zinc goods, sugar, bridges, oakum, glass, soap, candles, pottery, and foundry products. In 1920 there were 3 National banks, and several private banks, savings institutions, and trust and loan companies.

History.—Jersey City was formerly known as Paulus Hook; was laid out in 1804; chartered as the city of Jersey in 1820; incorporated as Jersey City in 1838; enlarged by annexation of Hudson and Bergen in 1870, and by Greenville in 1872; and was rechartered in 1889. Pop. (1910) 267,779; (1920) 298,-103.

JERUSALEM, one of the most ancient and interesting cities in the world, in Palestine, until the World War, in the Turkish province of Syria. It stands on an elevated site (about 2,500 feet above

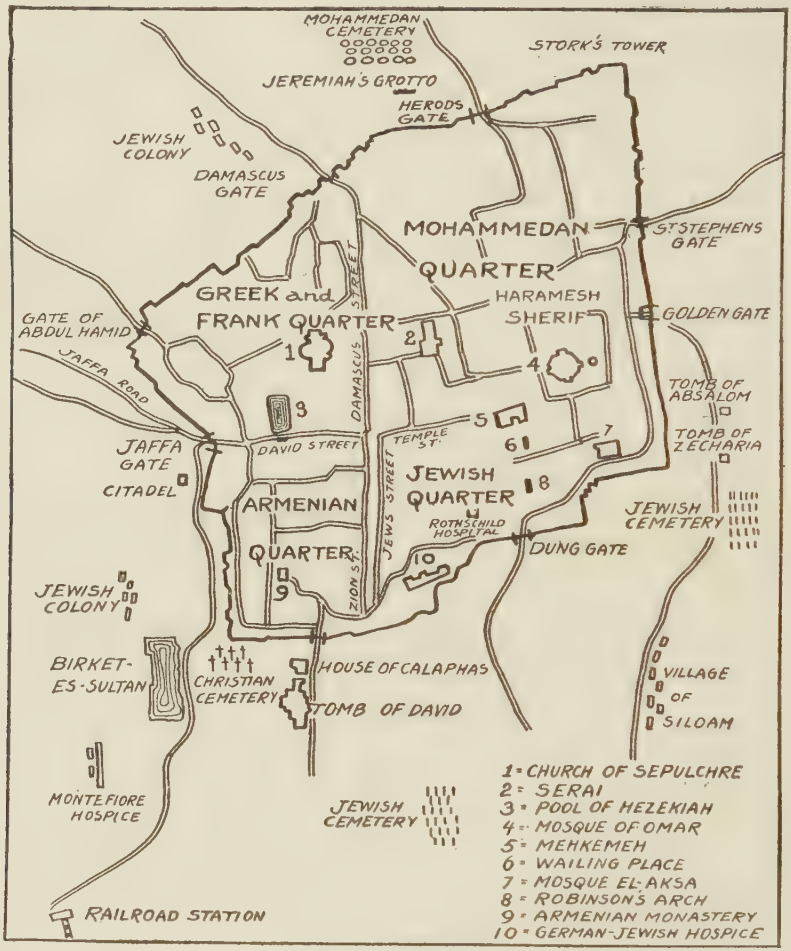
the sea) within the fork of two ravines, the Valley of Jehoshaphat on the E. and the Valley of Hinnom on the S. and W., while a third ravine or valley —the Tyropœon—partially traverses it from S. to N. On the E. side of this valley is Mount Moriah, now the Mohammedan quarter of the city, where anciently stood the palace and temple of Solomon. Immediately S. of this stood the mountain fortress of Zion, known as the City of David, and later as the Akra or Lower City. Of the three walls which Jerusalem latterly possessed, the first wall, that of David was for the defense of the Upper City (the traditional, but probably not the ancient Zion). The second wall took in a considerable area on the E. and N. E., while a new town or suburb, Bezetha, which grew up on the N. of this, was inclosed by a third wall, built by Agrippa I. The present limits are much the same as those indicated by the third wall, only that the old Lower City and the S. part of the old Upper City are unpopulated places outside the modern walls. Of the seven gates only five are now used. The interior of the city is much occupied by mosques, churches, and convents. In the N. W. quarter is the Church of the Holy Sepulcher, so called because alleged to contain under its roof the very grave in which the Saviour lay. This church, which was built by Helena, the mother of Constantine the Great, is remarkable for the richness of its decorations and the number of pilgrims by whom it is visited. A large area in the E. of the city is occupied by the inclosure known as El Haram-Esh-Sherif (The Noble Sanctuary). The most conspicuous building within it is the Mosque of Omar, called also Kubbet-es-Sakhrah (Dome of the Rock), a splendid structure of octagonal form which occupies the site of the Jewish Temple. Among the notable convents are the Latin convent, and the still more extensive Armenian convent capable of accommodating 1,000 pilgrims. The first railway to Jerusalem was opened in 1893. Pop. about 60,000.

Jerusalem is not mentioned by name till about 1500 B. C., when it was in the hands of the Jebusites. The lower part was wrested from them by Joshua, but the upper part continued in their possession till the time of David, who took up his residence in the stronghold of Zion and made Jerusalem the capital of his kingdom. It reached the height of its glory under Solomon after whose time it declined. In 586 Nebuchadnezzar took and destroyed the city after a long siege, and carried off those of the inhabitants whom the sword had spared as captives to Babylon. On the return from the captivity the temple was rebuilt, 515 B. C. The walls were not rebuilt till the time of Ezra and Nehemiah, 455 B. C. The city had regained a considerable degree of prosperity, when it was sacked and its walls leveled by Antiochus of Syria in 168. Under the Maccabees



THE DAMASCUS GATE, JERUSALEM

Jerusalem, in common with Judea, became once more independent, 165 B. C. It next became tributary to Rome, and had been greatly beautified and enriched with a fine new temple by Herod when the Saviour appeared. In A. D. 66 Jerusalem was taken by a party of Jews who had revolted against Rome. Titus, the son



MODERN JERUSALEM

of the Emperor Vespasian, regained it in the year 70, after a terrible siege; the temple was burned, and the city razed to the ground. In 131 Hadrian ordered the city to be rebuilt, but it continued depressed till the beginning of the 4th century, when, Rome having become Christian, Jerusalem shared in the benefit, and assumed the appearance of a distinguished Christian city, under the fostering care of Helena, mother of Constantine the Great. This period of prosperity, prolonged by a succession of Christian emperors, was suddenly terminated in 636, by the conquest of the Mohammedans, under the Arabian Caliph Omar. In 1099 the Crusaders took Jerusalem by storm, and made it the capital of a Christian monarchy, which with difficulty maintained its existence till 1187, when it was finally overthrown by Saladin. In 1517 Jerusalem fell into the hands of the Turks, and remained a part of the Ottoman empire, until the collapse of Turkey in 1918. The city was captured by British forces under Gen. Allenby in Dec., 1917 See ZIONISM; PALESTINE.

JERUSALEM ARTICHOKE. See ARTICHOKE.

JERUSALEM CHERRY, a name given to two shrubs of the genus *Solanum* (potato genus) cultivated as ornamental plants.

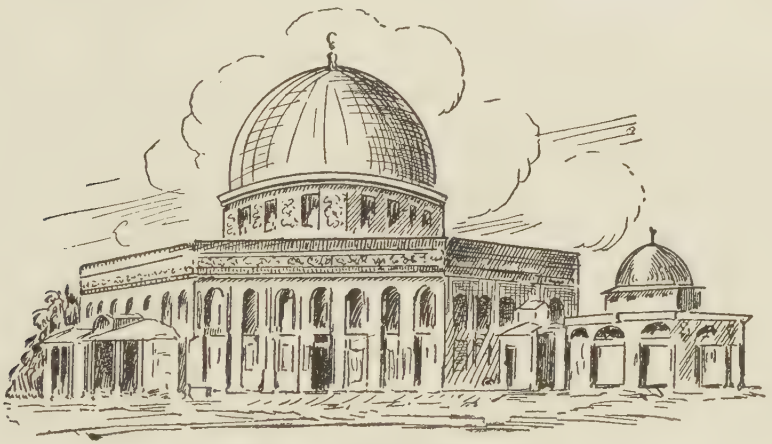
JERVIN, or **JERVINE,** in chemistry, $C_{30}H_{40}N_2O_3 \cdot 2H_2O$, an alkaloid discovered by E. Simon in the root of white hellebore (*Veratrum album*), in which it exists together with veratrine.

JESSE, in Scripture the son of Obed and father of David. He was a grandson of Ruth, the Moabitess, finding asylum in her land while David was in danger from the pursuit of Saul.

JESTERS, persons formerly kept in the households of princes and lesser dignitaries to furnish amusement by their real or affected folly, and hence commonly called court fools. It is not known when they first became a feature of European courts but in the reign of William the Conqueror, an almost contemporary historian, Maître Wace, has left a curious account of the preservation of William's life, when he was only Duke of Normandy, by his fool Goles. Other fools whose names have descended are the Hitard of Edmund Ironside, the Will Somers of Henry VIII., Archie Armstrong, and in France Caillet and Triboulet in the time of Francis I., and Chicot in the reign of Henry III. Triboulet figures in Rabelais, and is the hero of Hugo's "The King Amuses Himself" and of Verdi's "Rigoletto." The last private person to keep a fool in England is said to have been Sir Pexall Brocas, who died in 1630.

In the East the office of jester existed in the 8th century, and probably much earlier in India. The famous Calif Haroun al-Raschid had a jester named Bahalúl, some of whose sayings and doings have been preserved by Arabian writers.

JESUIT, a companion of the Society of Jesus, the most celebrated ecclesiastical order of modern times. The great religious revolution of the 16th century ran through the three stages which tend to occur in revolutions in general. First, there was a moderate departure from the previously existing state of things; then the Anabaptists burst loose from control, and went into extravagances and excesses. Reaction then became inevitable, and if a suitable leader should arise was bound to become powerful. That leader was found in Don Inigo Lopez de Recalde, generally known from



MOSQUE OF OMAR, JERUSALEM

the castle of Loyola, where he was born, in 1491, as Ignatius Loyola. He became an officer of great bravery in the army. Dreadfully wounded in 1521 while defending Pampeluna against the French, and long confined in consequence to a sick bed, he saw the vanity of the world, and resolved on a devotedly religious life. At the University of Paris, he made converts of two fellow students who lodged with him, one a youth of aristocratic descent, Francis Xavier, afterward the Apostle of the Indies. In 1534 he and they, with four others, seven in all, formed a kind of religious society, the members of which preached through the country. On Aug. 15 of that year they took vows of chastity, absolute poverty, devotion to the care of Christians, and to the conversion of infidels. This was the germ of the Jesuit order. A soldier, he bethought him of an army in which inferiors should give implicit obe-

dience to their superiors. A general should command, and should have none above him but the Pope. Paul III. issued a bull in 1540 sanctioning the establishment of the order with certain restrictions, swept away three years later. In 1541 Loyola was chosen general of the order, and afterward resided generally at Rome. His order spread with great rapidity, and at the death of Loyola, on July 31, 1556, consisted of above 1,000 persons, with 100 houses divided into 12 provinces. The Jesuits rendered great service to the papacy, but ultimately became unpopular with the civil government in most Roman Catholic countries. The people thought them crafty. In September, 1759, an order was given for the expulsion of the Jesuits from Portugal and Brazil. In 1764 the order was suppressed in France, and its property confiscated. On March 31, 1767, similar destruction overtook it in Spain, and soon after in Spanish America, and next, after 1768, in the Two Sicilies and Parma, till at length, on July 21, 1773, the Pope issued a bull suppressing the order altogether. Austria and the other Roman Catholic States obeyed the decree. In August, 1814, Pope Pius VII. re-established it. In June, 1817, the Jesuits were expelled from Russia, and the British Roman Catholic Emancipation Act, passed in 1829, left them under some disabilities which have since been removed. The bill regulating religious communities, which went into force in France in 1901, greatly restricted the Jesuits in their educational work. Roman Catholic higher education in the United States is largely under the control of the Jesuits.

JESUITS' BARK, or PERUVIAN BARK, the bark of a certain species of *Cinchona*, so called because it was first introduced into Europe by the Jesuits.

JESUITS' NUT, a name sometimes given to the fruit of the *Trapa natans*.

JESUP, MORRIS KETCHUM, an American banker; born in Westport, Conn., June 21, 1830; engaged actively in banking in 1852–1884, retiring in the latter year. In 1881 he became president of the New York City Mission and Tract Society, for which he built the DeWitt Memorial Church in Rivington street as a memorial of the Rev. Doctor DeWitt, his father-in-law. He was made president of the Five Points House of Industry in 1872; was a founder of the Young Men's Christian Association, of which he was chosen president in 1872; elected president of the Metropolitan Museum of Natural History in 1881, and of the New York Chamber of Commerce in 1899. He presented to the Metropolitan Museum of Art a collection of native woods valued at $100,000; to the Yale Divinity School, $51,000; to the Woman's Hospital in New York City, $100,000; to Yale University the Landbery Arabic MSS., for which he paid $20,000; and to Williams College, $35,000. In 1897 he provided funds for an anthropological exploration of Northwestern North America and eastern Asia. He died Jan. 22, 1908.

JESUS, the name miraculously given to the first born son of the Virgin Mary conceived by the Holy Ghost. An angel who appeared to Joseph, Mary's betrothed lover, directed that that son on His birth should be called Jesus, "for He shall save his people from their sins." Some persons suppose that when Christ is superadded, Jesus is analogous to what now would be called the Christian name, while Christ is the surname. This view is erroneous. The only personal name is Jesus, and Christ is the designation of office or mission, indicating that the being who bore it claimed to be the Messiah promised to the fathers. Nearly all the churches of the world, the Unitarian one being the chief exception, recognize a divine and human nature in Christ, regarding Him with respect to the former as the Second Person of the Trinity and the Son of God; with regard to the latter, as the perfect type of humanity, the only sinless man that has lived on earth. The birth of the Saviour is generally believed to have been in 4 B. C., the commencement of His ministry A. D. 26, and His crucifixion A. D. 29.

JESUS, son of Sirach, the author of the apocryphal book called Ecclesiasticus.

JESUS COLLEGE, in Cambridge, England, an institution founded by Alcock, Bishop of Ely, in 1496.

JESUS COLLEGE, in Oxford, England, was founded by Queen Elizabeth in 1571. Many of the fellowships and scholarships are confined to persons born or educated in Wales. The college is thus distinctively the Welsh one. This was the first college founded on Protestant principles.

JESUS ISLAND, an island of Lower Canada, surrounded by the St. John and Prairie rivers, the two branches of the Ottawa river, before it joins the St. Lawrence river; area, about 1,200 square miles.

JESUS, SOCIETY OF. See JESUIT.

JET, a dense variety of lignite passing by degrees of quality into bituminous fossil wood, sometimes perfectly black, capable of being easily cut and carved, and of receiving a very beautiful polish. It takes its name from Gagas or Gages, a place in Asia Minor, where, according to Pliny, the substance was obtained, whence in his time it was called gagates, afterward corrupted into gagat, the modern German name, and jet. As a material for mourning ornaments jet is admirably adapted, and for that purpose is largely used.

JETHRO, a king and priest of the Midianites, surnamed Raguel, who received Moses into his family when he fled from Egypt, and gave him his daughter Zipporah in marriage. When Moses had delivered the Israelites from their bondage, Jethro met him, and delivered him his wife and children.

JETSAM. See FLOTSAM.

JETTEE, the fiber of *Marsdenia tenacissima*, a small climbing plant of the natural order *Asclepiadaceæ*, of which the Rajmahal mountaineers make bowstrings.

JEVONS, WILLIAM STANLEY, an English logician; born in Liverpool, in 1835; was educated at University College, London; held an appointment in the royal mint in Australia from 1854 to 1859; graduated at London University in 1862; was appointed Professor of Logic, Mental and Moral Philosophy, and Cobden lecturer on political economy in Owens College, Manchester, afterward Professor of Political Economy in University College, London, a post which he resigned in 1881. Among his works are "Elementary Treatise on Logic" (1870); "Theory of Political Economy" (1871); "Principles of Science" (1874); and many essays and addresses on economic questions. He was drowned in 1882.

JEW, THE WANDERING, a mythical personage who forms the subject of many popular traditions. According to one account he was a carpenter and as our Saviour passed his workshop on his way to execution, the soldiers begged that He might be allowed to enter for a few moments and rest; but he not only refused, but ordered Him off. Jesus replied, "Thou shalt wander on the earth till I return." Driven by fear and remorse, he has since wandered, according to the command of our Lord, from place to place, and has in vain sought death. The legend first appears in the Chronicle of Matthew Paris, in the 13th century, where the Wandering Jew is called Cartaphilus, and is said to have been a servant of Pilate. His name in the later legends is Ahasuerus. This legend has formed the subject of long poems by Schubert and Mosen; of a tragedy by Klingmann; of a mystico-philosophical drama by Edgar Quinet; of prose romances by George Croly ("Salathiel"), Alexandre Dumas the elder, M. Œlckers, and David Hoffman ("Chronicles Selected from the Originals of Cartaphilus"); "The Wandering Jew," by Eugene Sue; "The Prince of India," by Lew Wallace; and of numerous small lyrical pieces.

JEW BUSH, *Pedilanthus tithymaloides*, a plant of the order *Euphorbiaceæ*. It grows in the West Indies, and is used in decoction as an antisyphilitic, and in cases of suppression of the menses. It is also called milk plant.

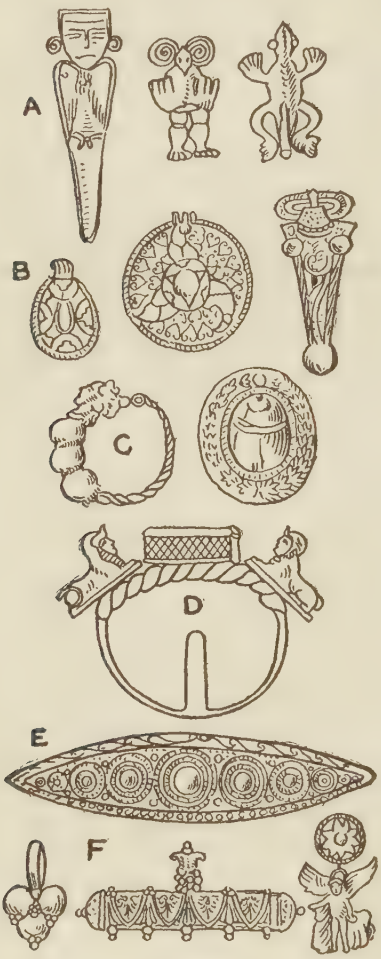
JEWELRY, a collective name for articles intended for personal decoration, made of precious metals, which may be enriched with stones or enamels. Popularly, there is much confusion between the terms gem and jewel; the former belongs especially to engraved stones.

Before the use of metals was known, jewelry, if it can be so termed, consisted of carved beads and fragments of such bright substances as were at the command of prehistoric man. Gold is the first metal of which there is any mention in literature, and there is no doubt that, being always found native, it was the first to be used by mankind. Among the numerous finds of gold jewelry of prehistoric times there are many specimens which show that the early artificers possessed considerable command over their material in the way of hammering out plates to uniform thickness, drawing or beating the metal into wire, and plaiting and twisting it into torques, armillæ, rings, and other forms of ornament. In these earliest gold ornaments there is no attempt at decorative treatment other than that what could be produced by the hammer; and it is only by degrees that simple efforts at chasing, engraving, and embossing make their appearance.

The distinction between jewelry of the present day and that of earlier times is found in the fundamental fact that the old work is the creation of the craftsman, while the modern jewel is the product of a manufacturer who adopts all labor-saving machines and appliances for the economical finishing of his wares.

JEWETT, SARAH ORNE, an American writer; born in South Berwick, Me., Sept. 3, 1849. She received an aca-

demic education. Her works include: "Old Friends and New"; "Country By-Ways"; "Deephaven"; and "Friends Ashore"; "A Country Doctor"; "A Marsh Island"; "A White Heron and Other Stories"; historical works: "The King of Folly Island, and Other



JEWELRY

A. PERUVIAN	D. EGYPTIAN
B. ANGLO-SAXON	E. MYCENAEAN
C. CYPRIAN	F. GREEK

People"; "Strangers and Wayfarers"; "A Native of Winby, and Other Tales"; "The Life of Nancy"; "The Country of the Pointed Firs"; etc. She died June 25, 1909.

JEW FISH, the name given to two species of large fishes well known in American waters. The one known also as the guasa or black grouper (*Promicrops itaiara*) sometimes reaches the weight of 700 pounds; the other (*Stereolepis gigas*) inhabits particularly the California coast, often weighs 500 pounds, and has flesh of excellent quality.

JEWISH WELFARE BOARD, an organization formed in New York on April, 9, 1917, as a result of the conference of representatives of the United Synagogue of America, the Union of American Hebrew Congregations, the Central Conference of American Rabbis, the Union of Orthodox Jewish Congregations, the Agudath La—Rabbonim, the Jewish Publication Society of America and the Council of Y. M. H. A. and kindred associations. The meeting was to remedy affairs such as occurred on the assembling of troops on the Mexican border, when the various Jewish agencies acted independently and had not coordinated their very well meant efforts. The purpose was to arrange that all welfare work necessitated by the participation of Jews in the war should be under the supervision and direction of a Central Board representing the seven organizations present, such a Board to be composed of one representative from each of the organizations enumerated, and two additional persons, to be elected by the seven representatives. At subsequent meetings representatives of other organizations attended. The Board secured permission from the War Department to engage in work in the various cantonments and camps and it was made plain that this would be granted only if all Jewish agencies were coordinated and would work through one organization.

The Board built up an organization and personnel for field work in the United States and abroad and to secure funds with which to finance the projected work. By Dec. 1, 1917, the Board had secured thirty-seven men for its field service, many of whom were volunteers, and had distributed them among the more important concentration points. A joint campaign for funds was launched in New York City, as a result of which $900,000 came into the Board's treasury. The Board was thus enabled to open headquarters in New York City with an administrative staff. A training school for welfare workers was established, and many classes were graduated. The workers were assigned to field work to help Jews in the army. Two thousand applicants for home and overseas service were considered. The work of the field representatives was conducted primarily in camps, cantonments and naval stations throughout the

country. The Board was represented in 149 camps, cantonments, forts and hospitals, and 44 naval stations, navy yards, submarine bases, and arsenals—a total of 193 places. The Welfare Worker was known as the Star of David Man. Meade, Upton, and Pelham Bay had Jewish Welfare Buildings, and others followed in rapid succession, fifty-one buildings being authorized, and thirty-five completed, 220,000 prayer books, 185,000 Bibles, 12,000,000 letter heads, 6,000,000 envelopes, and other literature were distributed.

JEWS, HEBREWS, or ISRAELITES, a people whose ancestors appear very early in the written history of mankind on the banks of the Euphrates, Jordan, and Nile, and whose fragments are now to be seen, in large or small numbers, in almost all the cities of the world; and though thinly scattered, both among the rudest and most civilized nations, preserving through thousands of ages common features, habits, religion, literature, and the same language—a phenomenon unparalleled in history. Descended from Abraham, the Jews were at first called Hebrews, from the alleged ancestor of that patriarch, Heber. After the time of Jacob, their first appellation was replaced by the word Israelites, from Israel, a surname of Jacob. The term Jew, derived from Judæus, dates from the captivity in Babylon. The Jewish people assign their origin to Abraham, whom they designate the father of their race. After Abraham, Isaac, his son, became their chief; then Jacob, or Israel, the son of Isaac. Jacob had 12 sons, among them Judah, the ancestor of David and of Jesus Christ. The descendants of Jacob multiplying very rapidly, they were eventually divided into 12 tribes, each of which was regarded as having been founded by one of the children of Jacob. In the closing years of his life Jacob settled in Egypt, in the land of Goshen. His posterity, powerful at first, were afterward enslaved and persecuted by the Pharaohs. Moses delivered them from their bondage in Egypt, and put himself at their head to conduct them into the land of Canaan. Under his leadership, the Jews miraculously passed the Red Sea, when Pharaoh and all his host were drowned. After wandering for 40 years in the desert, where Moses died, they reached the Land of Promise, their leader being Joshua, who had succeeded Moses. Joshua established the Jews in the Land of Promise and, dividing the country into 12 parts, gave a portion to each of the 12 tribes. After Joshua, the government was confided to a council of elders, then to judges; subsequently it became monarchial. Saul was the first king of the Jews; David succeeded him, and was followed by Solomon. These three kings established the dominion of the Jews throughout the ancient land of Canaan, and, for a short period, the kingdom extended to the Euphrates and the Red Sea, on which Solomon possessed the port of Elath. But on the death of the last king, the 12 tribes were divided, and from that schism sprang two kingdoms. The kingdom of Judah remained faithful to the lineal descendants of David, and offered allegiance to Rehoboam, son of Solomon; the kingdom of Israel elected for its sovereign Jeroboam. These two kingdoms, weakened by perpetual warfare and discord, were in the end enslaved. The kingdom of Israel was destroyed by Shalmaneser, King of Assyria, and the kingdom of Judah by Nebuchadnezzar, who first carried captive to Babylon a great part of the inhabitants, and afterward took Jerusalem by assault, destroyed the temple, and reduced to slavery the whole of the people. After a captivity of 70 years, the Jews obtained from Cyrus permission to re-establish themselves in Jerusalem, where they were governed by high priests. After the fall of the Persian empire, the Jews passed successively under the dominion of Alexander; of Ptolemy, King of Egypt; of Seleucus Nicator, King of Syria; and after once more falling under the sway of the kings of Egypt, were subsequently enslaved by the Syrians. Against these the Jews rose, under the leadership of Maccabæus, and threw off their yoke. The Maccabees became the hereditary sovereigns. Subsequently, the Romans interfered in the internal affairs of the Jewish kingdom and placed Herod I. on the throne of the Maccabees, 37 B. C. It was under the reign of Herod that our Saviour was born. After the death of King Herod, Palestine was distributed among his sons, and divided into four portions, called tetrarchies (Judæa, Galilee, Abilene, Ituræa); but in a few years the Romans sent into the country a pro-consul, who governed in their name, and shortly afterward Rome was sole master of the whole kingdom.

The Jews, impatiently supporting the Roman sway, revolted many times. The Emperor Titus took Jerusalem in the year 70, after a fearful siege of five months, as was prophesied. The city was again taken, under Adrian, in the year 135: the Jews were in great part exterminated; those who survived being driven forever from Jerusalem. From this period the Jews, ceasing to form an independent nation, have been scattered

over the earth. When Christianity became the religion of the Romans, their condition became very miserable. In 418, military service was interdicted them; in 610 the Emperor Heraclius persecuted them with many cruel enactments. Islamism treated them less rigorously. Under the reign of the Caliphs, the Jews of Asia, of Africa, and of Spain, were permitted to live in peace, and to cultivate commerce, letters, and the sciences. In Christian Europe, especially during the period of the Crusades, the Jews had to undergo every form of persecution. They were driven from England in 1290, from Central France in 1395, and from Spain and Sicily in 1492. In Germany, they belonged, like serfs, to the emperors and the nobles, who bought and sold them at their pleasure. The Inquisition was a particularly bitter foe to the Jews, especially in the Spanish dominions. In the 16th century, their condition became much improved. In France they were allowed to settle at Bayonne and Bordeaux in 1550; in 1784 they were relieved from the poll tax which had hitherto been imposed on them. Shortly afterward the other European States, following the example of France, treated them in a more liberal spirit.

The Jews are spread over every quarter of the globe, being exceedingly numerous in Russia, Germany, Poland, and the N. of Africa. There are over 3,000,000 in the United States. One estimate is 11,000,000 throughout the world. Though inter-mixed for 1,800 years with so many diverse nations, the Jews have not only preserved their religion, as already said, but a certain national type of feature, of which the most salient points are a dark skin, thick lips, and an aquiline nose. The Jews belong to the Semitic race, as is proved by their language, which is allied with the Arabic, the Syriac, and the Chaldean. Their primitive life was patriarchal, pastoral, nomadic, perhaps—certainly so in the desert between their departure from Egypt and entrance into the Land of Promise. In addition to the Old Testament they possess a literature which chiefly consists of legends, songs, proverbs, and genealogies. After their return from captivity in Babylon, philosophy and theology began to take their rise among the Jews, and a number of sects sprang up, such as the Pharisees, Sadducees, and Essenes. During the Middle Ages the Jews were instrumental, like the Arabs, in handing down the learning of antiquity.

In our own day and in almost every country they have illustrious representatives in all departments of business activity, and in the professions. Their religion is founded entirely on the Old Testament; it denies the divinity of Jesus Christ; but nevertheless teaches its followers to believe in the coming of the Messiah, who will collect the scattered Jewish people and found a great empire. The Jews admit no other revelation than that of Moses and the prophets; they observe at the present time the same ceremonies which the ancient Hebrews practiced—the celebration of the Sabbath, the Passover, the abstinence from certain viands which are termed unclean. With the ancient Jews all the priests were of the tribe of Levi; they thus bore the name of Levites, which, at the present time, is changed to rabbis. After the dispersion of the Jews, during the reign of Adrian, the principal doctors of religion assembled at Tiberias, where they formed a grand council, or Sanhedrim, and founded a school which became the nursery of their rabbis. These last composed, under the title of the Talmud, a work designed to contain the oral law and traditions of the Jews. This work was completed in the year 500 of the Christian era; and, with the greatest portion of the Jews, it became the basis of their faith; some, however, refused to accept it. Hence arose the division of the Jews into two rival sects—the Talmudists, or Rabbinists, who follow the Talmud; and the Caraites, who follow the strict letter of the Old Testament. See ANTI-SEMITES.

JEW'S EAR, a fungus, one of the *Hymenomycetes*, which grows on decaying parts of living trees, particularly elders. It is a native of Great Britain. In size and form it bears some resemblance to a human ear. Jew's ear was formerly in repute as a tropical discutient and astringent. It is still sold, but *Polyporus versicolor* is often substituted for it. The genuine Jew's ear, after being dried, swells when immersed in water; the *Polyporus* does not.

JEZEBEL, a Jewish queen, celebrated for her impious life. She was daughter of Ethbaal, King of Sidon, and wife of Ahab, King of Israel. She turned her husband from the worship of the true God, established temples to the idol Baal, and caused a large number of prophets and holy persons to be put to death. Jehu, on gaining the throne, flung her from the windows of her own palace, which killed her, the dogs devouring her, as had been foretold. Her name, given by St. John to a certain female of Thyatira, in his day holding a like bad pre-eminence in profligacy of life, is commonly applied to a rapacious, or vile woman.

JEZIRAH (-zī'rä), one of the two principal works of the Kabbala, its date being assigned by some to the 1st, by others to the 8th or 9th century.

JEZREEL, a city of Issachar (Josh. xix: 18), lying W. of Bethshean. Jezreel was called Esdraela in the time of the Maccabees, and is now replaced by a small and ruinous Arab village called Zerin, at the N. W. point of Mount Gilboa. Also the name of the great plain lying between Jezreel and Acre.

JEZREELITES, or the **NEW AND LATTER HOUSE OF ISRAEL**, a religious sect founded in England by a private soldier James White (1840–1885), who adopted the name of James Jershom Jezreel, and professed to be a messenger from God, whose revelations to him are recorded in "The Flying Roll." Christ, they believed, by His death, redeemed only souls, and those souls who have lived since Moses. For the salvation of the soul belief in the Gospel was sufficient; the body must be saved by belief in the Law. After the death of Queen Esther, Jezreel's widow, in 1888, the sect died out.

JHELUM, or **JEHLAM** (jel'um), also called the Bitasta (whence the ancient Hydaspes), one of the rivers of the Punjab. It rises in the mountains of Kashmir, which country forms its upper basin, and is navigable for about 70 out of 130 miles within that State. On the banks of this river was fought the battle between Alexander the Great and Porus.

JIB, a large triangular sail set on a stay, forward of the fore stay-sail, between the fore-top mast-head and jib-boom in large vessels. It occupies a position between the mast-head and bowsprit in cutters, schooners, and small craft, and does not necessarily run on a stay. Jibs are known by various names, according to position, etc., as inner-jib, outer-jib, standing-jib, flying-jib, spindle-jib, storm-jib, jib-of-jibs, etc. A jib-topsail or balloon-jib extends toward the topmast head, and in cutter yachts is sometimes a very large sail. Also, the extended arm of a crane; or that spar of a derrick which is stepped at the bottom and connected by tackle at the top to the vertical post.

JIDDAH, or **JEDDAH**, a seaport of the Hedjaz, Arabia; on the Red Sea, about 65 miles W. of Mecca. It owes its importance to the fact that it is the port of Mecca, and consequently the place of disembarkation for pilgrims bound for the Holy City.

JIHAD or **JEHAD** (jē-had'), a holy war proclaimed by the Mussulmans against Christians. The Sheeahs do not consider it legitimate to do this. The Soonees reserve the measure for great emergencies. Fanatics attempted to set one on foot in India in 1877. Sheik ul Islam, at Constantinople, proclaimed one against the Russians about 1877. Another was proclaimed after Turkey entered the World War in 1915, but it was a failure.

JIMENEZ (Hē'mā-nēz), a town of Chihuahua, Mexico, on an affluent of the Conchos river, 271 miles S. of El Paso, and 125 miles S. E. of Chihuahua city. The output of the Parral mining district, 50 miles W., is shipped here.

JIMMU-TENNO (jim'mö-ten'nō) ("Jimmu the emperor"), the supposed founder of the present Japanese dynasty, 5th in descent from the sun, and said to have ascended the throne in 660 B. C., the year from which the national records are dated. The national holiday, Feb. 11, is devoted to his worship.

JINRIKISHA (-rik'-) ("manpower vehicle"), a light, two-wheeled carriage, resembling a gig, containing one or two persons, and drawn by a human runner between the shafts, universally used in Japan. It dates from about 1868. The fare is from two to five cents a mile.

JITOMIR, or **ZHITOMIR** (zhit-om'ēr), formerly capital of the Government of Volhynia, Russia; now in the Republic of Ukraine, on the Tetereff; is an ancient Lithuanian city. Pop., about 100,000.

JOACHIM, JOSEPH (yo-ä'kim), a German violinist; born in Kittsee, near Pressburg, June 28, 1831. He first appeared in London in 1844. His performances at Vienna, Pest, Paris, and London established for him the position of one of the first violinists of the day. Died 1907.

JOACHIMITE, a follower of Joachim, Abbot of Flors, in Calabria. The Joachimites were a branch of the Fratricelli. They were condemned by the Council of Lateran in 1215, and by that of Arles in 1260–1261.

JOACHIMSTAL (that is, Joachim's Valley), a town of Bohemia, on the southern declivities of the Erzgebirge, 2,440 feet above sea level, and four miles from the Saxon boundary. Pop. of commune, about 7,500. Some manufacturing and trade interests. It is to this place that the German word Thaler or Taler owes its name. In 1518 the Count von Schlick issued here silver coins called *guldengroschen*, but these coins were

soon called by the surrounding public, with whom they were popular, Joachimsthaler (that is, belonging to, or coming from, Joachim's Thal or Valley), and this name was soon shortened to thaler. It is perhaps from this source that the name of the American dollar came.

JOAN OF ARC, OR JEANNE D'ARC, the Maid of Orleans; born of poor but devout parents, in the village of Domremy, Jan. 6, 1412. Her religious faith was ardent almost from her cradle. During the unhappy time of national

JOAN OF ARC
From the Sculpture by A. V. Hyatt.

degradation a prophecy, ascribed to Merlin, was current in Lorraine, that the kingdom lost by a woman (Queen Isabella) should be saved by a virgin, and no doubt this, together with her visions helped to define her mission to the brooding and enthusiastic mind of the young peasant girl. Her story was at first laughed to scorn, but her persistence bore down all opposition, and at last she succeeded in making her way to the Dauphin and convincing him by secret signs of her sincerity. She put on male dress and a suit of white armor, mounted a black charger, bearing a banner of her own device—white, embroidered with lilies, on one side a picture of God enthroned on clouds, on the other the shield of France supported by two angels, together with a pennon, on which was represented the Annunciation. Her sword was one that she divined would be found buried behind the altar in the Church of St. Catherine de Fierbois. Thus equipped she put herself at the head of an army of 6,000 men, dictated a letter to the English, and advanced to aid Dunois in the relief of Orleans, which was hard beset by the victorious enemy. Her arrival fired the fainting hearts of the French with a new enthusiasm. On April 29, 1429, she threw herself into the city, and, after 15 days of fighting, the English were compelled to raise the siege and retreat. The French spirit again awoke, and within a week the enemy were swept from the principal positions on the Loire. She urged the weak-hearted Dauphin to his coronation. Less than three months later she stood beside him at Rheims, and with tears of joy saluted him as king. She continued to accompany the French armies, and was present in many conflicts, and was mortified to the heart by the failure to carry Paris. At length, on May 24, 1430, she threw herself with a handful of men into Compiègne, which was then besieged by the forces of Burgundy; and, being driven back by them in a desperate sally, was left behind by her men, taken prisoner, and sold to the English by John of Luxembourg, in November, for 10,000 livres. In December she was carried to Rouen, the headquarters of the English, and flung into a gloomy prison, and at length arraigned before the spiritual tribunal of Pierre Cauchon, then Bishop of Beauvais, as a sorceress and a heretic, while the king left her to die. Her trial was long, and was disgraced by every form of shameful brutality. She was burned at the stake, May 30, 1431. She was beatified by Pope Pius X. in 1909 and canonized by Pope Benedict XV. in 1920. Monuments have been erected in her memory not only in France but in many other countries. Her story has been the basis for a number of plays among which the most famous are Shakespeare's "Henry VI." and Schiller's "Jungfrau von Orleans." The story of her life has been written by many authors, including Andrew Lang, Anatole France, and Mark Twain.

JOASH, or **JEHOASH,** the 8th King of Judah; born in 878 B. C. He was the only son of Ahaziah who was not slain by the usurping Athaliah, his grandmother. Being rescued by Jehosheba, his aunt, and secluded six years in the temple, he was raised to the throne, when

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THE GOVERNOR'S PALACE AT KINGSTON, ISLAND OF JAMAICA

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A TELEPHOTO VIEW OF THE TOP OF FUJIYAMA, JAPAN'S FAMOUS CONICAL EXTINCT VOLCANO

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AN AVENUE OF CRYPTOMERIA TREES AT NIKKO, JAPAN

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JERUSALEM FROM THE MOUNT OF OLIVES

E. M. Newman

THE STREET CALLED VIA DOLOROSA IN JERUSALEM. THE LOCATION IS THOUGHT TO BE THAT OF THE STREET CHRIST PASSED THROUGH ON THE WAY TO CALVARY

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THE WAILING WALL, ONCE PART OF SOLOMON'S TEMPLE, JERUSALEM

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THE DAMASCUS GATE, JERUSALEM, THROUGH WHICH PASSES THE ROAD TO DAMASCUS

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TEMPLE EMMANU-EL, FIFTH AVENUE, NEW YORK

seven years of age, through the faithful care of Jehoiada; and while this venerable man survived, Joash served God and prospered. Idols were banished, and the temple was repaired. But afterward he followed less wholesome counsels; idolatry revived; and when Zechariah, the high priest rebuked the guilty people, the ungrateful king caused this servant of God, the son of his benefactor, to be stoned to death. Misfortunes soon multiplied on his head; he was repeatedly humbled by the Syrians, and gave them the temple treasures as a ransom; a loathsome disease imbittered his life, which was soon cut short by a conspiracy of his servants, and he was not buried in the sepulcher of the kings (II Kin. xi, xii; II Chr. xxiii: xxiv). The prophet Joel was contemporary with him. He died in B. C. 838.

JOASH, the son and the successor of Jehoahaz, King of Israel. There was much in his conduct to commend. He had a great regard for the prophet Elisha, and visited him on his death bed, where by a divine oracle he was assured of three victories over the Syrians. He was also victorious when forced to give battle to Amaziah, King of Judah, and was one of the best kings of Israel. (II Kin. xiii: 9–25; xiv: 1–8; II Chr. xxv.)

JOB, a patriarch notable for his patience. In the English version of the Bible, Job stands 1st in order of the poetic books of the Old Testament, but it is the 3rd in the Hebrew Scriptures, Psalms and Proverbs preceding it, and the Song of Solomon coming next. A prologue (ch. i. ii.) and the conclusion (ch. xlii: 7–17), are in prose. The rest is poetry and of a very high order.

The book of Job is absolutely unique in the Old Testament. The hero is not a Jew. While the name Jehovah is used, the whole history of the Mosaic law and the chosen people is ignored. The author seems well acquainted with Egypt, its crocodiles (xli.), and its pyramids (?) (iii: 14), and the desert with its ostriches (xxxix: 13–18), its wild asses (xxiv: 5, xxxix: 5–8), and its too successful, tent-living predatory tribes (xii: 6). The language is Hebrew, with various Aramaisms, and with a faint Arabic tinge. The view still held by most commentators is that the book is very ancient, and its author probably Moses. If so, then it is intelligible why there is a resemblance between expressions in Job and in Genesis. (See Gen. ii: 23, and Job ii: 5; Gen. iv: 21, and Job xxi: 12, xxx: 31; Gen. vi: 2, and Job i: 6.) Others place it about the time of Solomon or that of one of the succeeding kings; Renan says about 100 years before the Captivity. The Talmud originated the view, since adopted by various Biblical critics, that the book is only a parable. But against this view may be quoted Ezek. xiv: 14, 20, and James v: 11.

JOB'S TEARS, a corn plant of India. It is a grass, sometimes rising to the height of eight feet, with the stout habit of maize, to which also it is botanically allied. The name is derived from the tear-like form of the hard, shining, bluish-white seeds, which are sometimes made into bracelets and necklaces, and are also an article of food. Though one of the worst of cereals, it has become almost naturalized in Spain and Portugal.

JOCASTA, wife of Laius, King of Thebes, and mother of Œdipus, whom she afterward married, not knowing that he was her son. On discovering the fact, she, in horror of the crime, hanged herself.

JOCHEBED, the wife of Amram, and mother of Moses, Aaron, and Miriam. She was a daughter of Levi, and her husband's aunt though such marriages were afterward prohibited.

JODHPUR (jōd-pör'), a town of Hindustan, capital of the state of Jodhpur. It stands in a hollow inclosed by rocky eminences, on the highest of which is a fort, containing the Maharajah's palace, The city has many handsome buildings, and is surrounded by a strong wall with 70 gates. Pop., about 60,000. The State of Jodhpur is the largest in Rajputána, having an area of 37,000 square miles; it is well watered by the Luni and its affluents; and raises good crops of wheat, barley, millet. Pop. about 2,500,000. See MARWAR.

JOEL, the name of a Hebrew prophet, and of more than 12 other persons mentioned in the Old Testament.

JOEL, BOOK OF, a prophetic book of the Old Testament, written by Joel, the second of the minor prophets. Nothing is known of him except that he was the son of Pethuel. Joel seems to have lived in Judah.

The date of Joel is doubtful. He has been placed in the reign of Joash (878–838 B. C.), in that of Uzziah (809–756), in which case he was a contemporary of Amos, with whose prophecies several verses of Joel agree. (Cf. Joel i: 4, ii: 25 with Amos iv: 6–9; Joel iii: 4–6 with Amos i: 6–10; Joel iii: 16 with Amos i: 2, and ver. 18 with Amos ix: 13). Others suppose him to have lived in the reign of Joram (893 or 892–883–884 B.

c.); or in that of Manasseh (699–644 B. C.). If there is a reference in Joel iii: 2 to the captivity of the 10 tribes, and in verse 1 to that of the two, this would indicate a late date, as the mention of the Grecians in verse 6 perhaps may do. The canonical authority of Joel has never been seriously disputed.

JOE MILLER (from JOSEPH MILLER, 1684–1738, a witty actor, who was a favorite about the time Congreve's plays were fashionable), a stale jest. The compilation, "Joe Miller's Jests," published a year after the death of the supposed author, was the work of John Mottley (1692–1750), but the term has been used to pass off, not only the original stock, but thousands of jokes manufactured long after Miller was buried in the churchyard of St. Clement Danes. Also a jest book, especially one in which the jokes are old, and the wit the reverse of sparkling.

JOFFRE, MARSHAL JOSEPH JACQUES CESAIRE, a French marshal. He was born ot Rivesaltes, Pyrénees, in 1852, and was educated at the College

MARSHAL JOFFRE

of Perpignan, and the Ecole Polytechnic. In 1870 during the Franco-Prussian War he entered the army as 2nd lieutenant, becoming lieutenant in 1872, captain in 1876, and major in 1889. In intervals he returned to the military college to study engineering and strategy, and in 1874 assisted in organizing the defenses of Pontarlier. He also took part in the French colonial wars and commanded part of the forces under Courbet in Tongking, and in 1891 helped to establish French authority among the revolting Dahomans. In 1894 he was promoted lieutenant-colonel, and in 1897 colonel, having been active in Africa as well as Madagascar. He was made brigadier in 1901 and general of division in 1905. In 1911 he was made chief of the general staff, and was at the head of the French army when the World War broke out in 1914. When the German drive into France took place in August and September of 1914, he kept the French forces in reserve and fell back toward Paris and the Marne, avoiding a decisive battle until the French army could be concentrated upon an advantageous line. By these tactics he was enabled early in September to attack the Germans in the valley of the Marne, and so checked the German invasion. He continued as commander in chief of the French armies till 1917, in which year he gave place to Marshall Foch. He is a distinguished mathematician, besides being known as a strict disciplinarian. He wrote one book, "My March to Timbuctoo." The military medal together with numerous other honors were conferred on him by the President of the French Republic for his great services in the war.

JOHANNESBURG, a town in the Transvaal, recognized as the central point of the gold fields of the district stretching S. W. from Pretoria to Potchefstrom, and known as the Witwatersrand. The streets and squares of the town are well laid out, and the buildings solid and substantial. Climate agreeable and healthful; winter nearly rainless, dust storms then prevailing. Founded in September, 1886, on a desolate plateau at the height of 5,600 feet above sea-level, it has grown with remarkable rapidity. Pop. (1918), 137,166 white, and some 120,000 colored.

JOHANNISBERG, a village of Prussia, overlooking the Rhine. It has a hydropathic establishment and manufactories of pianos and printing presses, but is noteworthy chiefly for its castle (1722–1732), the property of the Metternich family, and the famous vineyards (38 acres) on the castle hill, producing the choice Johannisberger white wine.

JOHN, the name of four men mentioned in the New Testament.

(1) John the Baptist, the forerunner of Christ, was the son of the priest Zacharias and Elizabeth, the cousin of Mary, the mother of our Lord. He was a Nazarite from his birth, and he prepared himself for his mission by years of self discipline in the desert, until at length he appeared to startle his hearers with the preaching of repentance. The rite of baptism which he administered was a token and symbol of repentance and forgiveness of sins, preparatory to that baptism to follow, the distinctive quality of which was to be the gift of regeneration through the power of the Holy Spirit. With the baptism of Jesus the more especial office of the forerunner ceased, and soon after his ministry came to a close. He had fearlessly denounced Herod Antipas for taking Herodias, his brother Philip's wife, and was accordingly flung into prison, where ere long he was executed at the request of Salome, the daughter of the abandoned Herodias. The Mandæans or Sabæans still claim to be his disciples.

(2) John the Apostle. His father was Zebedee (Matt. iv: 21), his mother Salome (Matt. xxvi: 56; Mark xv: 40, xvi: 1). His father was a fisherman who kept hired servants (Mark i: 20), and was therefore of some position. John was called with his brother James to follow Jesus (Matt. iv: 21). His nature was of that sensitive kind which is the temperament of genius, eloquence, passion, and love. In the first three Gospels he figures as Boanerges, or Son of Thunder (Mark iii: 17), and in the excess of his zeal he wished to call down fire from heaven on a village of the Samaritans because "they did not receive" Jesus (Luke ix: 54). In the 4th gospel the loving elements of his character alone appear. He was the disciple whom Jesus loved (John xx: 2). He was personally acquainted with Caiaphas, the high priest (John xviii: 15, 16, 19, 28). At the crucifixion the mother of Jesus was intrusted to his care, and he took her to his house (John xix: 27). With Peter he was early at the sepulcher (xx: 2–4). After the resurrection he remained at Jerusalem for at least 15 years (Acts iii., iv:; see xv: 6 and Gal. ii: 9). Tradition asserts that he visited Rome, and was there, before the Latin Gate, plunged into a caldron of boiling oil, from which he was supernaturally delivered, so that he was a martyr in will, though not in deed. The Roman Church commemorates this circumstance on May 6, under the title S. Johannes ante Portam Latinam. At a later period he was banished to Patmos, where he saw the apocalyptic vision (Rev. i: 9) Tradition makes his last sphere Ephesus, where he died at an advanced age.

(3) A dignitary mentioned in Acts iv:6.

(4) John Mark.

Christians of St. John, Disciples of John.—The first name was given by Europeans to, and the second assumed by, a Jewish sect, perhaps descended from the Hemero-baptists mentioned by an early Christian writer. They are followers of John the Baptist rather than of John the Apostle. They live in Persia and Arabia, especially at Bassora, and are called by the Orientals Sabæans.

The Epistles General of John.—The first epistle: No name indicating authorship appears in the letter itself, but the style is that of the 4th gospel, and 35 passages are nearly the same in each. The external evidence for its genuineness and authenticity is very strong. Evidence in its favor is adducible from Polycarp, Papias as quoted by Eusebius, Origen, Clement of Alexandria, and Tertullian. The general opinion of Christians is strongly in its favor. Its date has been fixed between A. D. 70 and 96 or 100, the last being the most probable. The epistle treats of love.

The second epistle: It is written by "the elder" to "the elect lady and her children." The external evidence for it is much weaker than that for the 1st epistle.

The third epistle: This was addressed by "the elder" to "the well-beloved Gaius." The domineering Diotrephes is censured, Demetrius commended. In point of evidence it stands like the 2d epistle.

The Gospel According to John.—The 4th Gospel, and distinct from the others in various respects. They record chiefly the ministry of Jesus in Galilee; it treats of His labors in Jerusalem. While they chiefly illustrate His humanity, it gives special prominence to His divinity.

The author of the book of John was well acquainted with the topography of Jerusalem (v: 2, ix: 7), and with the Jewish feasts, which he carefully records (ii: 13, vii: 2, x: 22, etc.). His Greek is of a Hebraic type, though not so much so as that of the Apocalypse. The book itself does not name its author; the nearly uniform voice of antiquity assigned it to John. In modern times there has been serious controversy on the subject, rationalists maintaining that it was penned too late in the 2d century to have emanated from John, who, at latest, cannot have lived beyond A. D. 100. The large majority of theologians, however, consider it of earlier date. Hilgenfeld, a rationalistic writer (1875), is willing to grant it as early a date as 132

to 140, and another one, Keim (1875) as 130 A. D.

JOHN, a name born by 23 Popes who reigned in the following order:

John I	523–526	John XIV	983–984
John II	533–535	John XV or XVI	985–996
John III	560–573	John XVI (anti-pope)	997
John IV	640–642	John XVII	1003
John V	685–686	John XVIII	1003–1009
John VI	701–705	John XIX	1024–1033
John VII	705–707	John XX	1042–1046
John VIII	872–882	John XXI	1276–1277
John IX	898–900	John XXII	1316–1334
John X	914–928	John XXIII	1410–1415
John XI	931–936		
John XII	956–964		
John XIII	965–972		

The following only have historical importance:

JOHN I. was a native of Tuscany, and ascended the papal chair on the death of Hormisdas in 523. Theodoric, King of the Goths, a violent Arian, threw him into prison at Ravenna, where he died in 526. The Roman Catholic Church honors him as a martyr.

JOHN VIII., a Roman, was elected to the pontificate on the death of Adrian II., in 872. He crowned the Emperor Charles the Bald in 875, and three years after went to France, where he held a council at Troyes. In his time Italy was ravaged by the Saracens, who obliged the Pope to pay tribute. He died in 882.

JOHN XI. was made Pope at the age of 25, in 931, through the influence of his mother, Marozia, wife of Guy, Duke of Tuscany; but his brother Alberico afterward threw both him and her into the castle of St. Angelo, where John died in 936.

JOHN XII., the son of Alberico, and originally called Octavian; born 938. He was elected Pope in 956. At that time Berenger tyrannized over Italy, and the Pope implored the assistance of the Emperor Otho I., who delivered the country. John crowned Otho at Rome, and promised him fidelity, but united with the son of Berenger against his deliverer. Otho returned to Rome in 963, and called a council, in which the Pope was accused of sacrilege and other crimes, which being proved, he was deposed. On the departure of the emperor, John entered Rome and exercised dreadful cruelties on his enemies. He died in 964.

JOHN XXII (James d'Euse), a native of Cahors, who by the patronage of Charles II. of Naples, to whose son he was preceptor, rose to high ecclesiastical dignities, and in 1316 was elected Pope. His pontificate was disturbed by various quarrels, especially with the Cordeliers, whose order he intended to suppress. He died 1334, respected for his frugality, prudence, and sanctity. He was well skilled in medicine and wrote medical works.

JOHN XXIII. (Balthasar Cossa), a Neapolitan who was legate at Bologna, and chamberlain to Boniface IX., and succeeded Alexander V., 1410. To pacify factions he promised to resign the tiara if Gregory XII. and Peter de Lune, or Benedict XIII., would also abandon their pretensions. Though these conditions were accepted and ratified in the council of Constance, he reassumed the office and insignia of sovereign pontiff; but he was soon after deposed and imprisoned. In 1418, he was restored to liberty, and compelled to acknowledge the election of Martin V. He died 1419.

JOHN, KING OF ENGLAND; born in Oxford in 1166, was the youngest son of Henry II. by Eleanor of Guienne. Ireland being intended for him, he was sent over, in 1185, to complete its conquest, but such was his imprudence that it was found necessary to recall him; and on the death of his father he was left without any provision, which procured for him the name of *Sans Terre*, or Lackland. His brother Richard, on coming to the throne, conferred on him the Earldom of Mortaigne, in Normandy, and various large possessions in England, and married him to the rich heiress of the Duke of Gloucester. Notwithstanding this kindness, he had the ingratitude to form intrigues against Richard, in conjunction with the King of France, during his absence in Palestine; but Richard magnanimously pardoned him, and at his death left him his kingdom in preference to Arthur of Brittany, the son of his elder brother, Geoffrey. Some of the French provinces, however, revolted in favor of Arthur; but John ultimately recovered them, and his nephew was captured, and confined in the castle of Falaise, whence he was subsequently removed to Rouen, and never heard of more. Being suspected of the murder of Arthur, the states of Brittany summoned John to answer the charge before his liege lord, King Philip; and upon his refusal to appear, the latter assumed the execution of the sentence of forfeiture against him; and thus, after its alienation from the French crown for three centuries, the whole of Normandy was recovered. A quarrel with the Pope Innocent III., who had nominated Stephen Langton to the see of Canterbury, added to the perplexity of the king, whom the Pope excommunicated, and whose subjects he formally absolved from their allegiance. At length John was induced not only to receive Langton as Archbishop of Canterbury, but to resign his

kingdom to the holy see, in order to receive it again as its vassal. John had by this time rendered himself the object of such universal contempt and hatred, that his nobles determined, if possible, to limit his power, and establish their privileges; the barons assembled in arms at Stamford, and immediately proceeded to warlike operations. They were received without opposition in London, met the king at Runnymead, and forced him to consent to their terms. Thus was obtained (June 15, 1215) that basis of English constitutional freedom known as "Magna Charta," which not only protected the nobles against the crown, but secured important privileges to every class of freemen. But while the monarch appeared to be all-complying and passive, he was secretly purposing to annul the charter. The Pope pronounced a sentence of excommunication on all who should attempt to enforce it; and John, having collected an army of mercenaries, carried war and devastation throughout the kingdom. The barons, taken by surprise, now sent a deputation to Philip of France, offering the crown of England to the dauphin Louis; who speedily, with 600 vessels, landed at Sandwich, and proceeded to London, where he was received as lawful sovereign. John was immediately deserted by all his foreign troops, and most of his English adherents; but the report of a scheme of Louis for the extermination of the English nobility arrested his progress, and induced many to return to their allegiance. While the king's affairs were beginning to assume a better aspect, he was taken ill, and died in Newark, in 1216.

JOHN, the name of various European monarchs.

FRANCE.

JOHN I., King of France, a posthumous son of Louis X.; born and died in 1316.

JOHN II., surnamed The Good, a king of France, son of Philip VI.; born in 1319, and succeeded his father in 1350. In 1356 he was taken prisoner by Edward the Black Prince at Poitiers and carried to England. After the treaty of Bretigny (1360) he returned home, leaving his eldest son, the Duke of Anjou, as hostage, till he should fulfil the terms of his ransom. But in the meantime the duke escaped back to France. John, however, chivalrously kept his word, and returned to London early in 1364; but he died on April 8 in that same year. without having regained his freedom. His eldest son, Charles V., succeeded him.

EASTERN EMPIRE.

JOHN I., Emperor of Constantinople, surnamed Zimisces, was of an illustrious family. He succeeded the emperor Nicephorus Phocas in 969, and obtained many victories over the Russians, Bulgarians, and Saracens. He was poisoned by Basil the Eunuch, in 976.

JOHN II., Comnenus, succeeded Alexis Comnenus, his father, in 1118. He gained several battles over the Turks and Servians, and governed with great prudence and liberality. He died in 1143, of a wound which he received from a poisoned arrow.

JOHN III., Ducas, was crowned at Nicea in 1222, at the time when the Latins were in possession of Constantinople. He was a prince of great virtue, gained many battles, defeated the Scythians, Tartars, and Bulgarians, and extended his empire on all sides. He died in 1255.

JOHN IV., Lascaris, son of Theodore the Young, whom he succeeded in 1259, at the age of six years; but, in the same year, the despot Michael Palæologus deprived him of his crown and his eyes, and imprisoned him for life. He died in 1284.

JOHN V., Palæologus, succeeded his father, Andronicus the Younger, in 1341, but his throne was for a long period usurped by John Cantacuzenus, whose daughter he married after recovering his throne. His son Andronicus revolted against him, and the Genoese made themselves master of the isle of Lesbos, and Amurath I. took the city of Adrianople. He died in 1391.

JOHN VI., Cantacuzenus, was the minister and favorite of Andronicus Palæologus, who made him guardian of his children, John and Emanuel, with whose mother, Jane of Savoy, he governed for some time with great wisdom and moderation. But, in 1345, he assumed the imperial title in Thrace, and, in 1347, took Constantinople, compelling John Palæologus, who had been crowned in 1341, and who had married his daughter, to retire to Salonica. The exiled monarch, however, with the help of the Genoese, defeated the fleet of the usurper, and obliged him to quit his throne and capital. He then retired to the monastery of Mount Athos, where he devoted himself to literary studies, and wrote a valuable history of the empire, and a defense of Christianity against the Mohammedans.

JOHN VII., Palæologus, succeeded his father Emanuel in 1425. His reign was very unfortunate, and the Turks made such progress in his dominions as to re-

duce him to the necessity of imploring the succor of the Latins. He consented to a union of the two churches, which was performed at the council of Ferrara, in 1439, at which John assisted in person. He died in 1448.

PORTUGAL.

JOHN I., King of Portugal, was the natural son of Peter, and, in 1383, ascended the throne, to the prejudice of Beatrice, daughter of Ferdinand I., his brother. John I., King of Castile, the husband of that princess, disputed the crown, but was defeated at the battle of Aljubarota, in 1385. He then turned his arms against the Moors of Africa, and took Ceuta and other places. He died in 1433.

JOHN II., surnamed the Great, and born in 1455, succeeded his father, Alphonsus V., in 1481. He was successful in his suppression of some insurrections, and afterward he carried his arms into Africa, and was at the taking of Arzile and Tangiers. He afterward defeated the Castilians at the battle of Toro, 1486, and with wise policy encouraged the maritime excursions of his subjects, and favored their settlements on the coasts of Africa and in the Indies. He died in 1495.

JOHN III. succeeded his father, Emanuel, 1521. The beginning of his reign was marked by dreadful earthquakes; but John, with benevolence and wisdom, relieved the miseries of his subjects, and encouraged commerce and navigation. His fleets penetrated far into the East, and discovered Japan; and to insure the tranquillity of his Indian settlements he sent among them the celebrated Francis Xavier. He died in 1557, deservedly respected as a humane and enlightened monarch.

JOHN IV., surnamed the Fortunate; born in 1604, was the son of Theodore, Duke of Braganza. He employed all the powers of his mind, and of his situation, to the emancipation of his country, which the Spaniards, after the death of Sebastian, had conquered, and since held as a tributary province, and by the assistance of his brave countrymen he shook off the odious yoke, and was proclaimed king, 1640. He died in 1656.

JOHN V. succeeded Peter II., 1707. He espoused the cause of the allies in the wars of the Spanish Succession, and when the peace of Utrecht, in 1713, restored tranquillity to Europe, he devoted himself to the encouragement of commerce, of literature, and of industry among his subjects. He died in 1750.

JOHN VI., second son of Peter III., was appointed regent when his mother, Maria I., lost her reason, in 1799. In 1807 he was driven by the French from Portugal, whereupon he took up his residence in Brazil, with the title of emperor. On the death of his mother, in 1816, he was proclaimed king, but did not return to Portugal till 1821. In 1823, French intervention again destroyed the hopes of the constitutional party in Portugal. The independence of Brazil was recognized in 1825, and the king died in 1826.

CASTILE AND LEON.

JOHN I., King of Castile and Leon, succeeded his father, Henry II., in 1379, at the age of 21 years. He made war on Portugal, for the purpose of placing his son on the throne of that country, but was unsuccessful. He, was surnamed "Father of His Country," for his generous and just rule of his kingdom. He died in 1390.

JOHN II.; born in 1405; was son of Henry III., and was proclaimed king when less than two years of age, his uncle Ferdinand being appointed regent. He made war successfully against the kingdoms of Aragon and Navarre, and the Moors of Granada. He greatly assisted in the restoration of Spanish literature, and was father of the celebrated Isabella and Henry IV. He died in 1454.

ARAGON.

JOHN I., King of Aragon, succeeded his father, Peter IV., in 1387. Throughout his reign he was continually at hostilities with his subjects, whom he governed with great injustice and severity.

JOHN II., son of Ferdinand the Just, ascended the throne of Navarre on marrying Blanche, daughter of Charles the Noble, in 1425, and that of Aragon in 1458, after the death of Alphonsus, his brother. He was for a long time at war with his son Don Carlos, to whom Blanche, his mother, had left the crown of Navarre at her death, in 1441. He died in 1479, leaving the kingdom to his son Ferdinand the Catholic.

BOHEMIA.

JOHN, King of Bohemia, the son of the Emperor Henry VII., was elected to the throne in 1310, at the age of 15. He was a warlike prince, and, after defeating the Lithuanians, assumed the title of King of Poland. He lost an eye in that expedition, and a Jewish doctor, who pretended to restore him to sight, deprived him of the other. His military spirit, however, continued unabated, and he accompanied Philip of France in 1346 to the battle of Cressy, where he was guided between two brave knights, each holding his bridle. He fell in that action, and was buried at Luxembourg.

POLAND.

JOHN III. (John Sobieski), King of Poland, was youngest son of James Sobieski, governor of Cracow, and educated at Paris. In 1665 he was made grand marshal and general of the Polish armies, after which he was appointed master of the Royal House and prelate of Cracovia. He retook several cities from the rebellious Cossacks of the Ukraine, and distinguished himself in many gallant actions. In 1673 he gained the memorable battle of Choczim, near the Dniester, in which the Turks lost 28,000 men. On the death of Michael in the following year he was elected King of Poland, and shortly afterward compelled the Turks to sue for peace. In 1683 he forced them to raise the siege of Vienna, which otherwise would inevitably have been taken. He died in Warsaw, 1696

BRITTANY.

JOHN, Duke of Brittany. Six princes of this name have worn the ducal crown, but only two are important: JOHN IV.—commonly known as John de Montfort,—whose cause was espoused by the English. When made prisoner by the French, he had his rights vigorously maintained by his heroic wife, who bravely held out her castle against the large force that encompassed it till the arrival of the English fleet with troops to her aid compelled the enemy to raise a fruitless siege. JOHN VI., who, for the aid he afforded the English in their expedition under Henry V., was attacked by the Duke of Penthièvre, who drew him into an ambuscade, and making him a prisoner, kept him in confinement for five years. His government, after he regained his liberty, was marked by weakness and indecision. He died in 1442.

JOHN, KNIGHTS OF. See HOSPITALLERS.

JOHN B. STETSON UNIVERSITY, a coeducational institution in De Land, Fla.; founded in 1883 under the auspices of the Baptist Church; reported at the close of 1919: Professors and instructors, 32; students, 649; president, Lincoln Hulley, Ph. D.

JOHN BULL, a collective name, used in a sportive manner in order to designate the English people. It was first employed by Dean Swift.

JOHN DOE, a name formerly given to the fictitious lessee of the plaintiff in the mixed action of ejectment, that of the fictitious defendant being "Richard Roe."

JOHN HIRCANUS, son of Simon Maccabæus, whom he succeeded as high priest and prince of the Jews 135 B. C.; died after a reign of 29 years, distinguished by his victories and reforms, 106 B. C.

JOHN OF AUSTRIA, or **DON JOHN,** a Spanish soldier; the natural son of the Emperor Charles V.; born in Ratisbon, Bavaria, Feb. 24, 1547. He was brought up in such ignorance of his birth that, till summoned by Philip II., his brother, to Spain—to whom Charles had revealed the fact on his death bed—and there acknowledged as the emperor's son, he had been in total darkness as to who his parents were. His first most illustrious triumph was a victory over the Turkish galleys in the Gulf of Lepanto, in which the Ottomans lost 30,000 men; he next invaded Tunis, and in 1576 was sent by Philip as governor of the Low Countries, then in open revolt, under command of the Prince of Orange and the Archduke Matthias; here, in a succession of splendid victories, he so reduced his antagonists, that the country must soon have submitted and returned to its allegiance, had he not been, unfortunately for the duration of the Spanish rule, suddenly carried off by poison, near Namur, Belgium, Oct. 1, 1578.

JOHN OF GAUNT, DUKE OF LANCASTER, 3rd son of Edward III.; born June 24, 1340, in Ghent. In 1359 he married Blanche, heiress of the duchy of Lancaster, and himself was created duke in 1362. Three years after her death he married in 1372 Constance, daughter of Pedro the Cruel of Castile, and assumed the title of King of Castile, though the country and crown were seized and held by Henry of Trastamare. The military expeditions which John organized against his rival all proved unsuccessful. Toward the close of his aged father's reign John gradually became the most influential personage in the realm. The young King Richard contrived to send him away on an expedition for the recovery of his crown in Spain. On this occasion John concluded a definite peace with Henry of Trastamare, in virtue of which John's daughter Catharine should succeed as queen of Castile. On his return to England after three years' absence he was able to reconcile the young king to his (John's) brother Thomas of Woodstock, Duke of Gloucester. After this Richard II. seems to have reposed more confidence in John, for he made him Duke of Aquitaine and intrusted him with several embassies to France. But John of Gaunt gradually ceased to be a factor in English politics

and died in London, England, Feb. 3, 1399.

JOHN THE BAPTIST. See JOHN.

JOHN'S, EVE OF ST., one of the most joyous festivals of Christendom during the Middle Ages, celebrated on Midsummer Eve. Fires were kindled chiefly in the streets and market places of the towns; sometimes they were blessed by the parish priest, but as a rule they were secular in their character. The young people leaped over the flames, or threw flowers and garlands into them, with merry songs, and dances. In England the people on the Eve of St. John's went into the woods and gathered boughs which were placed over their doors, to make good the prophecy respecting the Baptist, that many should rejoice in his birth. It was a lingering belief of the Irish peasantry that the souls of all people on this night leave their bodies and wander to their ultimate place of death by land or sea.

JOHNS HOPKINS UNIVERSITY, an American educational institution in Baltimore, Md.; incorporated in 1867, during the lifetime of the founder, but not formally opened till 1876, after his death. Johns Hopkins left the greater part of his fortune to the university, the endowment of which is over $3,000,000. The hospital maintained in connection with the institution is equally liberally endowed. Post-graduate study forms the leading feature of the course of instruction, though other courses are given. Several of the most important buildings were destroyed by fire in 1920.

The degrees of Bachelor of Arts, Doctor of Philosophy and Doctor of Medicine are conferred. Advanced and graduate students have elective courses, but each instructor has a discretion of his own with regard to admission to his classes. It reported at the close of 1919: Professors and instructors, 334; students, 2,969; volumes in the library, 94,000; productive funds, $15,000,000; income, $928,000; president, Frank J. Goodnow, LL.D.

JOHNSON, ALVIN SAUNDERS, an American economist and writer; born near Homer, Neb., in 1874. He graduated, University of Nebraska, in 1897 and took post-graduate courses in Columbia. From 1902 to 1906 he was instructor and adjunct professor of economics at Columbia University. From 1906 to 1908 he was professor of economics at the University of Nebraska and in 1908 occupied the same chair at the University of Texas. In 1910 he was appointed associate professor of economics at Leland Stanford University, becoming full professor in 1911. From 1912 to 1916 he was professor of economics at Cornell University and from 1916 to 1918 at Leland Stanford University. From 1917 he was one of the editors of the "New Republic" and contributed much to encyclopedias on economic subjects and wrote "Rent in Modern Economic Theory" (1903); "Introduction to Economics" (1909); "The Professor and the Petticoat" (1914).

JOHNSON, ANDREW, an American statesman, 17th president of the United States; born in Raleigh, N. C., Dec. 29, 1808. At 10 years of age he was indentured to a tailor, for whom he worked for seven years, receiving no schooling, but was taught to read by a fellow-apprentice. In 1826, with his mother, he emigrated to Tennessee. Here he married Eliza McCardle, a woman of good education, who instructed him in writing and other accomplishments. He was three times elected alderman, and then mayor in 1828–1830. In 1835 and in 1839 he was sent to the Tennessee Legislature. In 1840 he made campaign speeches for Van Buren, that gave him a wide reputation for oratory. In 1843 he was elected to Congress, and re-elected in 1845, 1847, 1849, and 1851. In 1853 Tennessee was "gerrymandered" to prevent his election, whereupon he ran for governor, and was elected. In 1857

ANDREW JOHNSON

he was sent to the United States Senate, where he ably advocated and secured the passage of a homestead bill, which President Buchanan vetoed. He ardently advocated the Union cause, and was made military governor of Tennessee by Lincoln in 1862, where he gave vigorous support to the Federal government. In 1864 was elected Vice-President, with Lincoln, and on the assassination of Lincoln, in April, 1865, became President by succession. His administration was marked by constant dissension between himself and Congress, and he was impeached before that body, for resisting the execution of the acts of Congress, and various alleged "high crimes and misdemeanors." The trial was presided over by Chief Justice Salmon P. Chase. A two-thirds vote necessary to convict could not be secured, and the trial failed (May 16, 1868). A change of one vote, however, would have carried conviction. When his term expired he retired to Tennessee, and in 1875 was elected to the United States Senate, but died July 31, of that year.

JOHNSON, BURGES, an American writer; born in Rutland, Vt., in 1877. He graduated, Amherst College, in 1899 and after several years of literary work he became literary adviser of G. P. Putnam's Sons. He later occupied the same position with Harper & Bros. He was managing editor of the "Outing" Magazine in 1907 and 1908. He entered the publishing business in 1908 as president of the Thompson, Brown Co., and in 1913 was manager of the educational department of E. P. Dutton & Co. From 1915 he was assistant professor of English at Vassar College. He wrote several humorous books of prose and verse, including "Yearbook of Humor" (1910); "The Well of English and the Bucket" (1917). He contributed many articles to magazines.

JOHNSON, BUSHROD RUST, an American military officer; born in Belmont co., O., Oct. 7, 1817. He was graduated at the United States Military Academy in 1840. He saw service in the Florida and Mexican Wars, but resigned his commission in 1847, and was made professor in the Western Military Institution of Kentucky, at Georgetown. He entered the Confederate army as a Brigadier-General at the commencement of the Civil War, and in 1864 became a major-general. He commanded a division under General Lee till the surrender at Appomattox Court House. He was afterward appointed superintendent of the Military College in the University of Nashville, and chancellor of that institution. He died Sept. 11, 1880.

JOHNSON, EASTMAN, an American painter; born in Lovell, Me., July 29, 1824. In 1849 he went to Düsseldorf, where he studied two years, and afterward resided for four years at The Hague, where, besides numerous portraits, he executed "The Savoyard" and the "Card Players." His favorite subjects are the American rustic and negro, and glimpses of domestic life, though later he devoted himself almost exclusively to portrait painting. He revisited Europe in 1885. Among his best works, many of which have been reproduced in chromo-lithography are "The Old Kentucky Home" (1859); "The Farmer's Sunday Morning" (1860); "The Village Blacksmith" (1864); "The Boyhood of Abraham Lincoln" (1867); "The Old Stage Coach" (1871); "The Wounded Drummer" (1872); "The Pedlar" (1873); "A Glass with the Squire" (1880); and "The Funding Bill" (1881). He painted portraits of Presidents Cleveland and Harrison. He died Apr. 6, 1906.

JOHNSON, EDWIN S., United States Senator from South Dakota. Born in Indiana in 1857 he moved to South Dakota and became a successful farmer. Interesting himself in politics he was elected by the Democrats of the State to serve on the National Democratic Committee. Elected to the United States Senate for the term 1915–1921.

JOHNSON, EMORY RICHARD, an American educator and economist, born in Waupun, Wis., in 1864. He graduated from the University of Wisconsin in 1888, and took post-graduate courses at the University of Pennsylvania. From 1893 to 1896 he was professor of economics at Haverford College and from the latter year he was professor of transportation and commerce at the University of Pennsylvania. In 1899 he acted as expert of transportation for the United States Industrial Commission. From 1899 to 1904 he was a member of the United States Isthmian Canal Commission. He acted as expert of valuation of railroad property, and was a member of many commissions of public service. He also acted as arbitrator in several disputes between railways and their employees. In 1917 he was assistant director of the Bureau of Transportation of the War Trade Board. He was a member of many economic societies. His writings on economic subjects include "Ocean and Inland Water Transportation," (1906); "Railroad Traffic

and Rates," (1911); "Panama Canal Traffic and Tolls," (1912); "History of Foreign and Domestic Commerce in the United States," (1916); "Principles of Ocean Transportation," (1917). He also contributed many reports on economic and transportation subjects.

JOHNSON, HIRAM WARREN, United States Senator from California, born in Sacramento, Cal., in 1866. He was educated at the University of California and was admitted to the bar in

HIRAM JOHNSON

1888. He at once became a prominent lawyer and gained nation-wide reputation through his participation in the trial of the San Francisco graft and boodling cases in 1906-1907. In these cases he acted as assistant prosecuting attorney in place of Francis J. Heney when the latter was shot. In 1910 he was nominated for governor by the Progressive element of the Republican party. The chief issue was the domination of the Southern Pacific railroad and in this Johnson won. His administration was successful and he became a conspicuous figure in national politics. He took a prominent part in the Republican nomination in 1912, where he opposed President Taft. He was nominated for the vice-presidency on the Progressive ticket with Theodore Roosevelt in that year. He was re-elected Governor of California in 1914 by an enormous plurality, but resigned in 1917 to go to the United States Senate to which he had been elected. He was the most bitter opponent of the Treaty of Peace with Germany and League of Nations Covenant in the Senate in 1919-1920. In the Republican Convention of 1920 he was one of the leading candidates for the nomination for the Presidency. See UNITED STATES, HISTORY.

JOHNSON, JOSEPH FRENCH, an American educator, born in Hardwick, Mass., in 1853. He graduated from Harvard University in 1878 and took post graduate courses in Germany. He acted as financial editor on several newspapers until 1893, when he was appointed professor in the Wharton School of Commerce at the University of Pennsylvania. From 1899 to 1903 he was lecturer on finance in Columbia University and from 1903 was professor of political economy and dean of School of Commerce, Accounts and Finance in New York University. He wrote much on financial and economic subjects. His works include "Money and Currency" (1905); "Report on the Canadian Banking System for the National Monetary Commission" (1916). He was editor of the "Journal of Accountancy" and several other periodicals on business. In 1913 he was a member of the Commission to Revise Banking Laws of the State of New York.

JOHNSON, OWEN (McMAHON), an American author, born in New York in 1878, the son of Robert Underwood Johnson. He graduated from Yale University in 1900. His first work "Arrows of the Almighty" was published in 1901 and this was followed in rapid succession by others, including "The Eternal Boy" (1909); "The Humming Bird" (1910); "The Varmint" (1910); "The Salamander" (1913); "The Spirit of France," (1915); "Virtuous Wives" (1917).

JOHNSON, ROBERT UNDERWOOD, an American poet and editor; born in Washington, D. C., Jan. 12, 1853; became associate editor of the "Century Magazine." His efforts in behalf of the establishment of international copyright were recognized by the degree of M. A., conferred by Yale University in 1891. He edited, with C. C. Buel, the notable "Battles and Leaders of the Civil War" (1887–1888), and has published two volumes of poems: "The Winter Hour and Other Poems" (1892); and "Songs of Liberty" (1897), "Italian Rhapsody" (1917). Appointed U. S. Ambassador to Italy in 1920.

JOHNSON, ROSSITER, an American editor; born in Rochester, N. Y., Jan. 27, 1840; was educated there, and edited the Rochester "Democrat" jointly with Robert Carter. From 1869 to 1872 he edited the Concord (N. H.) "Statesman"; in 1873–1877 was associated with George Ripley and Charles A. Dana in editing the "American Cyclopædia"; in 1879–1880 aided Sydney Howard Gay in his "History of the United States." In 1883 he became editor of the "Annual Cyclopædia." He devised and edited the series of "Little Classics" (16 vols. 1874–1875; two additional vols. 1880). He was editor-in-chief of the "World's Great Books" (50 vols. 1898–1901). Life of Captain John Smith" (1916); "Episodes of Civil War" (1916).

JOHNSON, SAMUEL, an English lexicographer; born in Litchfield, England, Sept. 18, 1709. He completed his education at Pembroke College, Oxford; and in 1732 taught school at Market Bosworth. In 1735 he married Mrs. Porter of Birmingham who possessed $4,000 and with this capital Johnson started a school at Edial, near Litchfield, obtaining only three scholars, one of whom was David Garrick. It was at this time that he began his tragedy "Irene." In 1737 he set out for the metropolis, accompanied by Garrick. On fixing his residence in London he formed a connection with Cave, the publisher of the "Gentleman's Magazine," his principal employment being the reports of the parliamentary debates. It was during this period that he formed a friendship for Richard Savage whom he immortalized in a biographical sketch. In 1749 appeared his "Vanity of Human Wishes," an imitation of Juvenal's 10th satire. In 1750 he commenced his "Rambler," a periodical paper, which was continued till 1752. About the period of his relinquishing the "Rambler," he lost his wife, a circumstance which greatly affected him, as appears from his "Meditations," and the sermon which he wrote on her death. In 1755 appeared his "Dictionary," which, instead of three, had occupied eight years. Lord Chesterfield endeavored to assist it by writing to papers in its favor in the "World"; but, as he had hitherto neglected the author, Johnson treated him with contempt. In 1758 he began the "Idler," which was published in a weekly newspaper. On the death of his mother, in 1759, he wrote the romance of "Rasselas," to defray the expenses of her funeral, and to pay her debts. In 1762 George III. granted him a pension. In 1763, Boswell, his future biographer, was introduced to him, a circumstance to which we owe the most minute account of a man's life and character that has ever been written. In 1773 he went on a tour with Boswell to the W. islands of Scotland, of which journey he shortly afterward published an account, which occasioned a difference between him and Macpherson, relative to the poems of Ossian. In 1779 he began his "Lives of the British Poets," which was the last of his literary labors. He died in England, Dec. 13, 1784.

JOHNSON, THOMAS LOFTIN, better known as Tom L. Johnson, an American municipal reformer, born at Georgetown, Ky., in 1854. He received practically no early education. His first employment was with a street-railway company. He rapidly rose to positions of responsibility and acquired a large fortune, partly through inventions relating to street railways. He purchased in 1876 an interest in a street railway of Indianapolis and later acquired large holdings in street railways in Cleveland, Detroit, and Brooklyn. He made these lines profitable by the introduction of through fares and transfers. He disposed of his street-railway interests for a large sum and entered politics. He was defeated for Congress in 1898 but was elected in 1890 and 1892. He was an ardent advocator of the single-tax ideas of Henry George and also his theories of municipal ownership attracted national attention. In 1901 he was elected mayor of Cleveland and was three times re-elected. During his terms of office he introduced radical reforms and won a fight to secure three-cent fares on the street-car lines of the city. He was defeated for the governorship of Ohio in 1903. He retired from active participation of public affairs in 1910 and died in the following year.

JOHNSON, SIR WILLIAM, a British officer; born in Warrentown, County Meath, Ireland, in 1715. In 1738 Johnson established himself as the manager of the estates of his uncle (Admiral Sir Peter Warren), on the S. side of the Mohawk river, about 27 miles from Schenectady, N. Y. Here he speedily gained the confidence of the surrounding Indians, learned their language, and was adopted as a sachem by the Mohawks. In 1743 he was appointed by the British government chief superintendent of the Indians, and in 1750, a member of the provincial council. At the close of the war with the French, in 1753, Johnson threw up his commission, and retired to his fortified residence, called Fort Johnson. In 1755 he met and destroyed the French army under Baron Dieskau, at

Fort George. In recognition of his services, Johnson was presented by the English government with a grant of 100,000 acres of land in the valley of the Mohawk, where he built the village of Johnstown, which became in 1772 the capital of Tryon county. He died near Johnstown, N. Y., July 4, 1774.

JOHNSON CITY, a city of New York, in Broome co. Until 1916 it was known as Lestershire. It is on the Susquehanna river, and on the Erie and the Delaware, Lackawanna, and Western railroads. Its industries include the manufacture of boots and shoes, cameras, furniture, etc. Pop. (1910) 3,775; (1920) 8,587.

JOHNSON CITY, a city of Tennessee in Washington co. It is on the Southern, the Carolina, Clinchfield, and Ohio, and the East Tennessee and Western North Carolina railroads. It is well known as a summer resort, having a beautiful situation in the midst of mountain scenery. It has a Soldiers Home and the East Tennessee State Normal School. There is also a public library and other public buildings. The city has manufactures of wood, iron, cigars, furniture, etc. Pop. (1910) 8,502; (1920) 12,442.

JOHNSTON, ALBERT SIDNEY, an American military officer; born in Macon co., Ky., in 1803; was graduated at the United States Military Academy in 1826; resigned his commission in the United States army in 1834, and enlisted in the army of Texas, of which he became commander-in-chief; made secretary of war of the Republic of Texas in 1838. He used all his influence in bringing about the annexation of Texas to the United States; and served in the Mexican War with marked distinction. In 1857 he was put in command of an expedition to Utah to force the Mormons to submit to the laws of the United States government, and showed such ability and tact in the delicate mission that he was brevetted Brigadier-General. When the Civil War broke out he was in command of the Department of the Pacific, but promptly resigned; was made a General in the Confederate army and assigned to the command of the Department of Kentucky. On April 3, 1862, he marched from Corinth, Miss., intending to attack Grant at Pittsburg Landing, or Shiloh Church, 20 miles off, on the 4th. There was delay on the part of some of the troops so that the attack could not be made till the morning of the 6th, but with his 40,000 men Johnston attacked Grant's 50,000 with such impetuosity, skill, and dash, that the National force was driven back at every point, and huddled together at Pittsburg Landing. Just as Johnston remarked to one of his staff: "The victory is ours. We shall soon water our horses in the Tennessee river," he was stricken with a minie ball and bled to death in 15 minutes. Johnston's death delayed the contemplated attack and in the meantime Buell and Mitchell came up with 55,000 fresh troops, and thus the fruits of Johnston's early victory were lost, and the next day the Confederate army was forced to fall back to Corinth.

JOHNSTON, SIR HARRY HAMILTON, an English author and explorer. Born in 1858 in London he first traveled in Africa in 1879, and three years later helped to explore the Congo and Portuguese West Africa. In 1884 he headed a scientific expedition to Mount Kilimanjaro, in 1889 explored Lake Nyassa, and in 1900 climbed Mount Ruwenzori. From 1899 to 1901 he was consul-general and commander in chief of the Uganda protectorate. He is the author of many works of scientific and geographic interest on Africa, and also has recently written an excellent novel entitled "The Gay-Dombeys" (1919).

JOHNSTON, HOWARD AGNEW, an American clergyman, born in Greene co., Ohio, in 1860. He graduated from the University of Cincinnati in 1882 and from Lane Theological Seminary in 1885, and was ordained to the Presbyterian Ministry in the same year. After serving as pastor in Ohio and Illinois, he was appointed pastor of the Madison Avenue Church in New York in 1899, serving until 1905. This was followed by pastorates at Colorado Springs and Stamford, Conn. until 1917, when he engaged upon institutional work in Chicago. He was the author of "Studies in God's Methods of Training Workers" (1900); "Bible Criticism and the Average Man" (1902); "The Famine and The Bread" (1908); "Victorious Manhood" (1909).

JOHNSTON, JOSEPH EGGLESTON, an American military officer; born in Cherry Grove, Va., Feb. 3, 1807; was graduated at the United States Military Academy in 1829; greatly distinguished himself in the Florida and Mexican Wars; promoted quartermaster-general of the army with the rank of Brigadier-General in June, 1860; resigned his commission when Virginia seceded; made Major-General of Virginia Volunteers and later full general in the Confederate service; took an active part in the first

battle of Bull Run where he personally led a charge with the colors of the 4th Alabama Regiment in his hands. During the autumn of 1861 he had a bitter controversy with Jefferson Davis, holding that inasmuch as he had outranked Cooper, Albert S. Johnston, and Robert E. Lee in the United States army he was entitled to do so in the Confederate army. On March 12, 1863, he was ordered to take immediate command of Bragg's army, but the condition of his health obliged him to decline the duty. In the operations of Grant before Vicksburg he strove to prevent Pemberton from allowing himself to be shut up in Vicksburg, telegraphing him May 2d: "If Grant crosses, unite all your troops to beat him. Success will give back what was abandoned to win it." Again and again he sent similar orders to Pemberton, but they were disobeyed; Pemberton allowed himself to be shut up in Vicksburg, and the siege and surrender on July 4th followed. In December of the same year he took command of Bragg's army at Dalton, Ga., and by the spring of 1864 brought it to a state of efficiency which it had not had for a long time, though it contained only 45,000 men against Sherman's 98,797. The campaign from Dalton to Atlanta, a distance of 100 miles, was a series of severe engagements without a general battle, and Johnston's friends claimed that "the retreat had been the masterpiece of Johnston's life, and one of the most skillful and successful that had ever been executed." On July 17, 1864, Johnston was succeeded in this command by General Hood. After the war he engaged in business; was member of Congress in 1876–1878, and United States Commissioner of Railways in 1885–1889. He died in Washington, D. C., March 21, 1891.

JOHNSTON, ROBERT MATTESON, an American historian. Born in Paris in 1867 he received his education in France, Germany and England. He graduated from Cambridge University in 1889 and entered upon the practice of law. In 1907-1908 he was professor of history at Bryn Mawr College and later became assistant professor of history at Harvard. Among his works are: "The French Revolution" (1909); "Napoleon" (1904); "Bull Run" (1913). He died on Jan. 28, 1920.

JOHNSTONE, a city of Scotland in Renfrewshire. It has important manufactures of paper, shoes, iron, machinery, etc. Pop. about 12,000.

JOHNSTOWN, a city and county-seat of Fulton co., N. Y.; on Cayadutta creek, and on the Fonda, Johnstown and Gloversville railroad; 48 miles N. W. of Albany. There are electric lights and street railroads, high school, grist mills and extensive manufactures of gloves and mittens. It has several savings banks, daily, weekly and monthly periodicals. Pop. (1910) 10,447; (1920) 10,908.

JOHNSTOWN, a city in Cambria co., Pa.; on the Conemaugh river and Stony creek, and on the Pennsylvania and the Baltimore and Ohio railroads; 78 miles E. of Pittsburgh. It contains the great Cambria iron and steel plant, wire, tinplate, wall-paper, paint, cement, fire brick, and leather and woolen manufactories; is the mining, lumbering, stone working, farming, and manufacturing trade center for a region having a population of 225,000; is the seat of Cambria and Johnstown Memorial Hospitals; and has National and other banks, electric light and street railroad plants, daily, weekly, and monthly periodicals. On May 31, 1889, the city was the scene of a terrible disaster caused by the breaking of the dam across the South Fork of the Conemaugh river, at a point 10 miles E. of the city. The entire valley was in a few minutes devastated and the city of Johnstown and its surrounding villages were practically swept away. Pop. (1910) 55,482; (1920) 67,327.

JOHOR, a State of the Malay Peninsula in the extreme S. and separated from Sumatra by the Straits of Molucca. It is an independent state, within the British sphere of influence. Formerly it was important as the distributing center of spices brought from the Moluccas en route for India and Europe. Singapore was formerly its capital and chief port, but the British succeeded in including it in the Straits Settlements which in 1867 was erected into a crown colony. Pop. about 200,000.

JOHOR, or **JOHORE BARU,** capital of the state of Johor, on the S. coast, opposite the middle of the island of Singapore; a free port; in 1866 a place composed of only a few huts; but now a town with about 18,000 inhabitants.

JOINDER, in law, the joining or coupling of two things in one suit or action; also the joining or coupling of two or more parties as defendants in one suit; or the acceptance by a party in an action of the challenge laid down in his adversary's demurrer or last pleading.

JOINT, in anatomy, the union of any two segments of an animal body, through the intervention of a structure or struc-

tures different from both. The different kinds of joints may be thus classified: 1. Synarthrosis: (1) Suture, (2) Schindylesis, (3) Gomphosis, (4) Amphiarthrosis. 2. Diarthrosis: (1) Arthrodia, (2) Enarthrosis, (3) Ginglymus, and (4) Diarthrosis rotatorius. The terms symphysis, synchondrosis, syneurosis, syssarcosis, and meningosis, formerly applied to joints, are now discarded.

In carpentry, a mode of securing together the meeting edges of wooden structures; the place where one piece of timber is united to another. The straight joint is where the edges make a butt-joint, being planed straight. Timbers are generally joined by mortises and tenons, or by straps and bolts. The various kinds of joints are named according to their forms and uses, thus: (1) A butting joint, in carpentry, is one in which the fibers of one piece are perpendicular to those of the other; in machinery, one in which the pieces meet at right angles. (2) A bevel joint, one in which the plane of the joint is parallel to the fibers of one piece and oblique to those of the other. (3) Dove-tail joint. (4) A longitudinal joint is one in which the common seam runs parallel with the fibers of both. (5) A miter joint, one formed by the meeting of matching pieces in a frame, the parts uniting on a line bisecting the angle, which is usually, but not necessarily, one of 90°. (6) A square joint, one in which the plane of the joint is at right angles to the fibers of one piece, and parallel to those of the other.

In geology, a natural fissure or line of parting traversing rocks in a straight and well-determined line, often at right angles to the planes of stratification.

In masonry, the face-joints of voussoirs are those which appear on the face of the arch. The vertical joint is between stones of the same course. The horizontal joint is between courses. The coursing-joint is the joint between the courses of voussoirs. The heading-joint is that between two voussoirs in the same course. The flush-joint is filled up to the face by pointing with mortar.

In plumbing, the sheets of sheet-metal roofing are joined by a drip-joint or a flashing-joint in cases where they are not soldered. A flush-joint or jump-joint is a butt joint covered with a plate on the inner side, called the butt plate. In a lap-joint the pieces overlap each other.

The word is also applied in slang to an opium-smoking den; or any resort of bad repute.

JOINT STOCK, stock held jointly, or in company. A joint stock company is a kind of partnership entered into by a number of individuals for the purpose of carrying on some trade or business with a view to individual profit; invested by statutes, in Europe and many of the United States, with some of the privileges of a corporation. In ordinary partnerships, the members contribute more or less of their own personal labor or management to the affairs of the company. In joint stock partnerships, on the other hand, the members only contribute to the funds or "stock" of the company, without having any direct share in the management; and hence their name. The capital of the company is generally divided into equal parts, called "shares," a certain number of which are held by each member of the company; and in proportion to the number of these he is entitled to participate in the profits of the undertaking. These shares are freely transferable without the consent of the company.

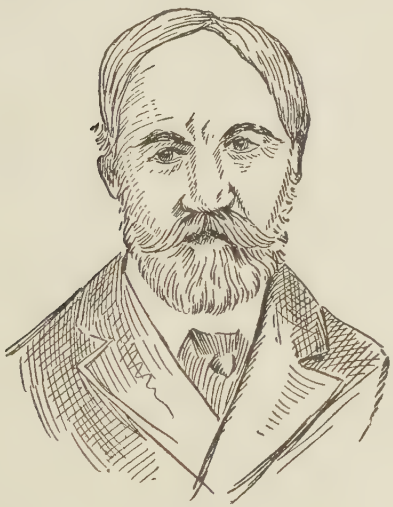
JOINVILLE (zhwa*ng*-vēl′), a small town of 4,000 inhabitants in the French department of Haute-Marne, which was formed into a principality by Henry II., and later supplied the title to the 3d son of Louis Philippe.

JOINVILLE, FRANÇOIS FERDINAND PHILIPPE LOUIS MARIE d'ORLÉANS, PRINCE DE, third son of Louis Philippe, King of France; born in Neuilly, near Paris, France, Aug. 14, 1818. On completing his education he entered the French navy. In 1836 he became lieutenant; in 1837 joined his brother, the Duke de Nemours, at Constantine, soon after the taking of that city; during the war with Mexico, in 1838, he engaged the batteries of St. Jean d'Ulloa, with his corvette the "Creole"; and shortly afterward, at the head of his sailors, stormed the gate of Vera Cruz, and took prisoner General Arista for which he received the cross of the Legion of Honor, and was appointed post-captain; in 1840 he brought to France from St. Helena the remains of Napoleon I.; in 1843 he married, at Rio Janeiro, the Princess Francesca of Braganza, sister of Don Pedro II., and was the same year promoted to rear-admiral; in 1845 he commanded the fleet that bombarded Tangiers and captured Mogador, on which he became vice-admiral; during the events of 1848, he was at sea before Algiers; surrendering his command to the Republicans, he joined his exiled family at Claremont. With his nephews, the Comte de Paris and the Duc de Chartres, he accompanied General McClellan, in the Virginian campaign of 1862, and published on it an impartial article in the "Review of Two Worlds," of 1863;

he served incognito in the Franco-Prussian war, 1870–1871; in 1873 he was elected to the French Assembly. He died in Paris, France, June 17, 1900.

JOINVILLE, JEAN, SIEUR DE (zhwa*ng*-vēl′), a noted French chronicler; born in Champagne, France, in 1224. He took part in Louis IX.'s crusade, and on his return spent his leisure composing his invaluable "Memoirs," which embody the important "History of Saint Louis," sometimes treated as a separate work. He died July 16, 1317.

JÓKAI, MAURUS (yō′ko-i), a Hungarian novelist; born in Komora, Feb. 19, 1825. He studied law, but never practiced. From 1846 he edited several important periodicals. During the Hungarian struggle of 1848 he was an active patriot but after the restoration of Austrian rule was forced to abandon political writing and turned to fiction. He wrote nearly 300 volumes, including novels, dramas, poems, etc. In January, 1894, all Hungary united in celebrating the 50th anniversary of his first book, "Working Days," and an edition de luxe of his complete works was published, groups of poor people and whole villages combining to purchase copies. He was married in 1848 to Rosa Laborfalvi, the greatest of Hungarian actresses. His best-known works are: "Poor Rich Men," "The World Turned Upside Down," "The Romance of the Next Century," "Black Diamonds," "Eyes Like the Sea," "The Accursed Family," "Timar's Two Worlds," "The Green Book," "Pretty Michal," "Midst the Wild Carpathians," "In Love with the Czarina," "Dr. Dumany's Wife" (1898). Died 1904.



MAURUS JÓKAI

JOKJAKARTA (yok-yä-kär′tä), a residency of Java, in the central part of the island; area, 1,191 square miles; pop. about 500,000, nearly all Javanese (see JAVA). Capital, Jokjakarta, with the sultan's palace and ruins of ancient temples; pop. 8,000.

JOLIET, a city and county-seat of Will co., Ill., on both sides of the Des Plaines river, on the Illinois and Michigan canal, and on the Atchison, Topeka and Santa Fe, the Rock Island and Pacific and other railroads; 40 miles S. W. of Chicago. The city contains the Silver Cross and St. Joseph's Hospitals, State penitentiary, and St. Francis and St. Mary Academies, public library, high school, and Swedish Orphan Home; is largely concerned in the steel industry; and has manufactories of steel and barbed wire, stove and boiler works, machine shops, tin plate and horse-shoe works, boot and shoe factories and flour mills. There are electric lights and street railways, National banks, daily, weekly, and monthly periodicals. Pop. (1910) 34,670; (1920) 38,372.

JOLIET, LOUIS, a French-Canadian explorer; born in Quebec, Canada, Sept. 21, 1645. Educated for the priesthood, he became a merchant. In 1672 he was commissioned by Frontenac, the governor of New France, to make explorations in that country, and in 1673, in company with Father Marquette, a Jesuit priest, and five other Frenchmen, he explored the Fox, Wisconsin, Illinois, and Mississippi rivers. He died in May, 1700.

JOLLYBOAT, a small boat used for the general miscellaneous work of the ship, such as bringing off, marketing, etc. A boat of this kind attached to United States vessels of war is called a dingy.

JOMELLI, NICCOLO (yō-mel′lē), an Italian composer; born in Naples, Italy, Sept. 11, 1714. He was the author of 36 operas, which were generally very popular. His celebrated "Requiem" and "Miserere" are often played in Roman Catholic Churches. He died in Naples, Italy, Aug. 28, 1774.

JOMINI, BARON HENRI (zhō-mē-nē′), a Swiss writer on military science; born in Payerne, Vaud, Switzerland, March 6, 1779. He joined the Swiss Guards at Versailles, and rose to be chief of the staff to Marshall Ney. In 1804 he attracted the notice of Napoleon by his "Treatise on Large Military Operations." He distinguished

himself at Jena, in the Spanish campaigns of 1808, the retreat from Russia, and at Lützen and Bautzen. Offended by Napoleon, he entered the service of Russia in 1814. In 1828 he took part in Russian War against Turkey and the capture of Varna. He wrote: "Critical and Military History of the Campaigns of the Revolution" (1806); "Life of Napoleon" (1827); "Summary of the Art of War" (1830). He died in Passy, France, March 24, 1869.

JONAH, a prophet, the son of Amittai, and a native of Gath-hepher (II Kings xiv: 25), a border town of the tribe of Zebulun (Joshua xix: 13). He lived prior to or in the reign of Jeroboam II. (II Kings xiv: 23, 25), who ascended the throne 824 B. C.

The Prophecies of Jonah.—The book opens with a divine command given to Jonah to go to Nineveh and cry against it for its wickedness. In place of obeying this injunction, Jonah took ship for Tarshish. A storm arising the crew cast lots to discover who had raised the tempest and the lot fell on Jonah and he was cast overboard. A great fish swallowed the prophet, who remained alive in the body three days and three nights. His prayer offered from his living dungeon being answered, the fish vomited him out on the dry land. The closing episode of the narrative represents the prophet in the execution of his ministry. A second time he was ordered to go to Nineveh, and this time he obeyed. The people, alarmed by his declaration that in 40 days the city should be destroyed, humbled themselves before God and thus averted the threatened judgment.

JONATHAN, a son of Saul, and the constant and unshaken friend of David. Jonathan fell in battle in the war with the Philistines.

JONATHAN, son of Mattathias, and brother of Judas Maccabæus, a famous Jewish general. He compelled Bacchides, the Syrian commander, to sue for peace; defeated Demetrius Soter and his general Apollonius. At length he fell by treachery into the hands of Tryphon, who, after receiving a large sum as a ransom for him, put him to death, 143 B. C.

JONES, ANDRIEUS ARISTIEUS, an American public official, born in Tennessee in 1862; he received his education both general and legal at Valparaiso University in Indiana. For a time he was principal of the public schools of Las Vegas N. M., whither he had moved in 1885. Later he entered the law firm of Jones and Rogers. He became a prominent member of the Democratic party in the territory and state of New Mexico, being National Committeeman from that state. Appointed first Assistant Secretary of the Interior in 1913.

JONES, DAVY, in sailors' superstition, an evil sea spirit whose locker, or chest is at the bottom of the sea.

JONES, HENRY ARTHUR, an English dramatist; born in Grandborough, Bucks, England, Sept. 20, 1851. He wrote: "A Clerical Error" (1879); "Silver King" (1882); "Saints and Sinners" (1884); "Middleman" (1889); "Judah" (1890); "The Dancing Girl" (1891); "The Tempter" (1893); "The Masqueraders" (1894); "The Triumph of the Philistines" (1895); "The Rogue's Comedy" (1896); "The Liars" (1897); "The Manœuvres of Jane" (1898); "Mrs. Dane's Defence" (1900); "The Hypocrites" (1906); "The Lie" (1914), etc.

JONES, INIGO, the reviver of classical architecture in England in the beginning of the 17th century; born in London, England, July 15, 1573. The Earl of Pembroke sent him to Italy to study art. At Venice the works of Palladio inspired him with a taste for architecture. Having returned to England, he became court architect under James I. and Charles I. Among his best-known works are the Banqueting House at Whitehall, Ashburnham House, Covent Garden Piazza, Heriot's Hospital, Edinburgh, and Shaftesbury House. Being royalist and Catholic he suffered heavy losses during the Civil War, and died in poverty in London, June 21, 1652.

JONES, JACOB, an American naval officer; born near Smyrna, Del., in March, 1768; joined the United States navy in 1799; served in the war with Tripoli; was captured in 1803 and held a prisoner for 18 months; made commander of the "Wasp" in 1811, and with her captured the English brig "Frolic" Oct. 18, 1812, but on the following day he fell in with the English war vessel "Poictiers," 74 guns, by which both the "Wasp" and its prize was taken. For his victory over the "Frolic" Jones was voted a gold medal by Congress, and $25,000 was granted to him and his crew. He died in Philadelphia, Pa., Aug. 3, 1850.

JONES, JENKIN LLOYD, an American Unitarian clergyman. Born in Wales in 1843 but brought to Wisconsin at an early age. After serving in the Civil War, he received his theological

education at Meadville, Pa., and then returned as a pastor to Wisconsin. In 1882 he founded the All Souls' Church in Chicago of which he became the pastor. He has written extensively on religious subjects. He died in 1918.

JONES, JOHN PAUL, an American naval officer; born in Kirkham, Kirkcudbrightshire, Scotland, July 6, 1747. His father was gardener to the Earl of Selkirk. He entered the merchant service, was engaged in the American and West Indian trade, and is said to have realized a handsome fortune. On the outbreak of war between the colonies and mother country he offered his services to the former, and in 1778, being then in command of the "Ranger," he made a descent on Whitehaven, set fire to the shipping, and plundered the Earl of Selkirk's mansion. Next year, in command of the "Bon Homme Richard" (42 guns) and a small squadron, he threatened Leith, and captured the British sloop of war "Serapis" after a bloody engagement off Flamborough Head. On his return to America he was somewhat neglected by Congress, and in 1788 entered the Russian service with the rank of rear-admiral, but owing to the jealousy of the Russian commanders soon retired from this service. He returned to Paris, where he died in poverty and ill health, July 18, 1792. In 1905 his remains were brought to America in the armored cruiser "Brooklyn" and interred at the U. S. Naval Academy, Annapolis, Md.

JONES, JOHN PERCIVAL, an American Senator. Born in England in 1829 and died in Nevada, 1912. Brought to the United States at an early age he was educated in the Cleveland Public Schools. During 1848-1849 he went to California where he attained success as a mine owner. Removing to Nevada in 1867 he became the owner of a prosperous silver mine which gave him a large fortune. He served three terms in the United States senate and championed the cause of free silver although he was a Republican. For a time he deserted that party to follow Bryan, but later in 1900 returned to the Republicans.

JONES, WESLEY LIVSEY, United States Senator from the State of Washington; born in Illinois in 1863, he graduated from Southern Illinois College in 1886. Three years later he moved to Washington, at that time a territory, and took up the practice of law. He identified himself with the Republican party in the State and was active in the presidential campaigns in the West. From 1899-1909 he was a member of the National Congress and in the latter year was elected to the Senate. In 1914 he was re-elected for a second term.

JONESBORO, a city of Arkansas, the county-seat of Craighead co. It is on the St. Louis and San Francisco, the St. Louis Southwestern, and the Jonesboro, Lake City, and Eastern railroads. It is an important industrial city and has manufactures of flour, lumber, peanut-hulling machinery, cotton oil, baskets, machinery, etc. It is also the distributing center of an extensive agricultural region. It has the State agricultural school, an Elks Home, Federal building, and a hospital. Pop. (1910) 7,123; (1920) 9,384.

JONGLEURS (zhôn*g*-glur'), among Provençals and northern Frenchmen, a class of minstrels during the Middle Ages who sang and often composed poems, songs, and fabliaux, and who frequented courts, tournaments, castles, and towns for that purpose. They made a trade of song, poetry, and story-telling, and are distinct from the knightly poets, the Troubadours and Trouvères. We find them also named indifferently *ménestrels* (minstrels) or *ménestriers*. Two of their number, Jacques Grure and Hugues-le-Lorrain, founded the church of St. Julien in 1331.

JONKOPING (yuhn'*h*uh-ping), a town of Sweden, capital of the *län* or county of Jönköping; at the S. end of Lake Wetter, 115 miles E. of Gothenburg. It is famous for its safety matches; paper, carpets, tobacco, etc., are also made. Here peace was signed between Sweden and Denmark in 1809. Pop. county (1917) 220,607; town 28,798.

JONQUIL, a bulbous plant of the genus *Narcissus* (*N. Jonquilla*), allied to the daffodil. It has long lily-like leaves, and spikes of yellow or white fragrant flowers. The sweet-scented jonquil (*N. odorus*), a native of southern Europe, is also generally cultivated. Perfumed waters are obtained from jonquil flowers.

JONSON, BENJAMIN, commonly called BEN JONSON, a celebrated English dramatist, the contemporary and friend of Shakespeare; born in Westminster, England, in 1573. When young, he ran away from home and entered the army, serving first in Flanders. On his return he went to Cambridge, but poverty obliged him to leave the university and take to the stage.

At first he was not very successful, either as an actor or an author, and having killed another actor in a duel, he was imprisoned and narrowly escaped

with life. On being released from confinement he married, and recommenced writing for the stage, to which he was encouraged by Shakespeare, who performed in one of his pieces. In 1598 he produced his comedy of "Every Man in His Humor," which was followed by a new play every year, till the reign of James I., when he was employed in the masques and entertainments at court. He joined Chapman and Marston in writing the comedy of "Eastward Hoe," which so grossly libelled the Scotch nation that the authors were committed to prison. He soon regained the favor of the king, and for the remainder of that reign he continued in high favor as a kind of superintendent of the court revels. In 1619 he was appointed poet-laureate, with a salary of $500, and a butt of canary wine yearly from the king's cellars. Want of economy, however, kept him constantly poor, though he had a pension from the city. His principal plays are "Sejanus," "Volpone," "Epicæne," and "The Alchemist." He died Aug. 16, 1637, and was buried in Westminster Abbey, where a tablet has been erected to his memory in Poet's Corner, with the inscription, "O Rare Ben Jonson."

JOPLIN, a city in Jasper co., Mo., on the Missouri Pacific and other railroads; 14 miles S. W. of Carthage and 168 miles S. of Kansas City. It is the commercial trade center of the Southwest Missouri lead and zinc mining district; principally engaged in mining, smelting, and the manufacture of white lead; has electric lights and street railroads; Holly system of waterworks; 2 National banks, and daily, weekly, and monthly periodicals. Pop. (1910) 32,073; (1920) 29,902.

JOPPA. See JAFFA.

JORAM, or **JEHORAM** (-hō'ram), son of Ahab, King of Israel; successor of his older brother Ahaziah, 896 B. C. During his reign of 12 years the Moabites revolted. Joram secured the aid of Jehoshaphat, King of Judah, and defeated the Moabites with great slaughter. He was involved in war with Ben-hadad, King of Syria, and Hazael his successor; and at this time occurred the miraculous deliverance of Samaria from siege and famine, and also various miracles of Elisha, including the healing of Naaman. Joram was wounded in a battle with Hazael, and met his death, in the suburbs of Ramoth-gilead, by the hand of Jehu his general. His body was thrown into the field of Naboth, at Jezreel, and with him perished the race of Ahab.

JORAM, or **JEHORAM**, the son and successor of Jehoshaphat, King of Judah. He reigned with his father, from 889 B. C., four years, and four years alone. He was married to Athaliah, daughter of Ahab and Jezebel, whose evil influence made his reign a curse to the land. He slew his own brothers, five in number, and seized their possessions. He also introduced Phœnician idols and their worship into Judah. A successful revolt of the Edomites, and repeated invasions of the Philistines and Arabians made of his reign a calamity.

JORDAN ("descending"), the principal river of Palestine, the bed of which forms a great valley stretching from N. to S., in the E. part of the country. It is formed by the junction of three streams. The highest source of the Jordan is the Hasbany, which rises near the Druse town of Hasbeiya, on the W. side of Mount Hermon. There is another spring on the S. side of the same mountain at Bânias (Paneas or Cæsarea Philippi), and the Leddan at Dan. The Jordan flows S., and after a course of a little over 100 miles, having passed through the small Huleh Lake (The Waters of Merom) and the Lake of Tiberius (Sea of Galilee), 682 feet below the Mediterranean, it falls into the N. extremity of the DEAD SEA (*q. v.*), 1,292 feet below the Mediterranean. Besides smaller affluents, it receives four streams, the Wady Far'ah and Wady Kelt from the W., the Hieromax and Jabbok from the E. The source is 1,700 feet above the Mediterranean, making a total fall when it reaches the Dead Sea of 3,000 feet. The Upper Jordan was first explored by John McGregor in his Rob Roy canoe in 1869.

JORDAN, DAVID STARR, an American educator; born in Gainesville, N. Y., Jan. 19, 1851. He studied at Cornell and Harvard. After holding important professorships, he served as president of the University of Indiana from 1885 to 1891. In the latter year he was made president of Leland Stanford Jr. University. He served in this capacity until 1913, and as chancellor from 1913–1916, when he became chancellor emeritus. He wrote "Science Sketches," "Care and Culture of Men," "Footnotes to Evolution," etc., and served on a number of important government commissions, since 1909 Director of World Peace Foundation, author of 400 scientific monographs, "The Way of Lasting Peace" (1916), etc., president California Academy of Science, 1896 and 1909, chairman U. S. Fisheries Commission (1901-1904) and Alaska Salmon Investigation (1903-1904.)

JORDAN, ELIZABETH, an American editor and writer, born in Milwaukee, in 1867. She graduated from the Convent of Notre Dame, Milwaukee, and was for ten years following on the editorial staff of the New York "World." She was editor of "Harper's Bazar" from 1900 to 1913, and from the latter year, was literary adviser to Harper and Brothers. She was a member of many women's organizations and was a prominent worker for woman suffrage. Her published writings include "Tales of the City Room" (1898); "Many Kingdoms" (1908); "Wings of Youth" (1917). She also wrote many plays. She contributed many short stories to American and English magazines.

JORULLO (hō-röl'yō), **XURULLO,** or **XORULLO,** a volcano of Mexico, about 75 miles S. S. W. of Morelia, and 80 miles from the Pacific Ocean; lat. 19° 10′ N., lon. 101° 1′ 45″ W. The site of this remarkable mountain was formerly a fertile plain, about 2,890 feet above sea-level, but a violent eruption, on Sept. 28 and 29, 1759, raised it to an elevation of 4,265 feet, and sent forth immense quantities of lava, with stones of great size. The elevation is about 4 square miles in area, and is covered with thousands of small mounds or *hornitos* (little ovens) from 6 to 9 feet high, from which, till recently, issued steam and sulphurous vapors. The San Pedro and Cuitimba, two rivers which formerly watered this tract, sink into the earth on the E. side, and appear again as hot springs on the W. side of the elevation.

JOSEFFY, RAFAEL, a Hungarian composer and pianist. Born in Hungary in 1852, he was educated at the conservatories in Leipzig and Berlin. About 1880 he came to America where he was first recognized as a great teacher of music. Later he toured Europe and finally made his home in Vienna. He has written an excellent text on musical instruction entitled "School of Advanced Piano Playing," (1892).

JOSEPH, the son of Jacob and Rachel; born in Mesopotamia (Gen. xxx: 22-24). The history of Joseph is one of the most pleasing and instructive in the Bible; and is too beautiful for abridgment, and too familiar to need rehearsal. Joseph died, aged 110, 1637 B. C.; A Mohammedan wely or tomb covers the spot regarded generally, and it may be correctly, as the place of his burial. It is a low stone enclosure, and stands in quiet seclusion among high trees, at the W. entrance of the valley of Shechem, at the right of the traveler's path, and nearer Mount Ebal than Mount Gerizim.

JOSEPH, the husband of Mary, Christ's mother. His genealogy is traced in Matt. i: 1-15, to David, Judah, and Abraham. His residence was at Nazareth in Galilee, where he followed the occupation of a carpenter, to which Christ was also trained (Mark vi: 3).

JOSEPH, or **JOSEE.** See BARNABAS, ST.

JOSEPH, called BARSABAS and surnamed JUSTUS, one of the two persons chosen as worthy to fill the vacant place of Judas among the Twelve Apostles (Acts i: 23).

JOSEPH, KING OF NAPLES. See BONAPARTE.

JOSEPH I., Emperor of Germany, the son of Leopold I.; born in Vienna, July 26, 1678. He succeeded his father in 1705. He was engaged nearly the whole of his reign in hostilities; and with England and Holland continued the war against France, to seat the Archduke Charles on the throne of Spain. The splendid victories gained by the allies under Marlborough in the Low Countries, and Prince Eugene on the Rhine, made the reign of Joseph remarkably brilliant. His arms were equally triumphant in Italy and Hungary; in the latter kingdom he drove the revolted Rackoczy from the country, and forced him to seek safety in France; while in the Italian peninsula his conquest was most complete; all the great cities from Mantua to Genoa were laid under heavy contributions. He died April 17, 1711.

JOSEPH II., Emperor of Germany; son of the Emperor Francis I., and Maria Theresa; born in Vienna, Mar. 13, 1741. He was crowned King of the Romans in 1764; the year following he succeeded his father; and in 1780, by the death of the empress-queen, he succeeded to the crown of Hungary and Bohemia. In 1788, a declaration of war was published against the Turks, and the same year the emperor, in person, reduced Schabatz; but this was followed by a defeat of Prince Lichtenstein, who fell in the action. Soon after this a bloody battle was fought between the Imperialists and Turks, on the heights of Rohadin, in which neither could claim the victory. Joseph next made an attempt to possess himself of Belgrade, but without success. But Marshal Laudon taking on himself the command of the army, took Dubicza and Novi, and, in 1789, reduced Belgrade, soon after which a peace was concluded, chiefly in consequence of the agitation caused in Europe by the French revolution. He died in Vienna, Feb. 20, 1790.

JOSEPH EMMANUEL, King of Portugal; born in 1715. He was son and successor of Charles V., and ascended the throne in 1750. The great earthquake at Lisbon, in 1755, and the expulsion of the Jesuits from the kingdom in 1759, were the principal events of his reign. He died in 1777.

JOSÉPHINE, MARIE ROSE (zhō-zā-fēn′), Empress of the French; born in the island of Martinique, June 23, 1763. Her father, Tascher de la Pagerie, was captain of the port at St. Pierre. When about 15 years of age she went to France, and in 1779 married Viscount Alexandre Beauharnais. A daughter of this marriage, Hortense, Queen of Holland, was the mother of Emperor Napoleon III. Joséphine's husband was executed during the Reign of Terror, she herself just escaping. On March 9, 1796, she was married to Napoleon Bonaparte. She accompanied him in his Italian campaign. At Malmaison, and afterward at the Luxembourg and the Tuileries, she attracted round her the most brilliant society of France, and contributed not a little to the establishment of her husband's power. But her marriage with Napoleon proving unfruitful, it was dissolved by law, Dec. 16, 1809. She died in Malmaison, near Paris, May 29, 1814.

JOSEPH OF ARIMATHEA, a rich Israelite of high character, who seems to have been a member of the Great Council or Sanhedrim. He opposed the determination of his colleagues to bring about the death of Jesus, but did not openly profess himself a disciple from motives of fear. But the courage of his convictions came to him at the moment of the crucifixion, and on the evening of that day he went boldly to Pilate and begged the body of Jesus, burying it reverently in his own rock-hewn tomb. An ancient tradition makes him carry the GRAIL (*q. v.*) to Britain about the year 63 and settle at Glastonbury.

JOSEPHSTADT (yō′zef-stät), one of the most important fortresses of the former Austrian empire; situated at the confluence of the Mettau and the Elbe in Bohemia, 10½ miles N. by E. of Königgrätz.

JOSEPHUS, FLAVIUS (-sē′fus), a famous Jewish historian; born in Jerusalem in A. D. 37. On his mother's side he was descended from the Asmonæan princes, while from his father, Matthias, he inherited the priestly office. He enjoyed an excellent education, and at the age of 26 he went to Rome to plead the cause of some Jewish priests whom Felix, the procurator of Judæa, had sent thither as prisoners. He obtained their release and received valuable gifts from the empress. On his return to Jerusalem he found his countrymen eagerly bent on a revolt from Rome, from which he used his best endeavors to dissuade them; but failing, he professed to enter into the popular designs. He was chosen one of the generals of the Jews, and sent to Galilee. When Vespasian and his army entered Galilee, Josephus threw himself into Iotapata, which he defended for 47 days. When the place was taken, the life of Josephus was spared by Vespasian through the intercession of Titus. Josephus thereupon assumed the character of a prophet, and predicted to Vespasian that the empire should one day be his and his son's. Vespasian did not release him from captivity till he was proclaimed emperor (A. D. 70). Josephus was present with Titus at the siege of Jerusalem, and afterward accompanied him to Rome, receiving the freedom of the city. He assumed the name of Flavius, as a dependant of the Flavian family. His works are written in Greek, and are: "History of the Jewish War" (about A. D. 75); "Jewish Antiquities" (about A. D. 93); His own "Life" (not earlier than A. D. 97); "A Treatise on the Antiquity of the Jews," or "Against Apion." He died about A. D. 100.

JOSHUA, the name of four persons mentioned in the Old Testament (Josh. i: 1; I Sam. vi: 14–18; II Kings xxiiii: 8; Hag. i: 1). The last-named Joshua is the Jeshua of Ezra v: 2. The earliest and most celebrated of the four, after whom the other three were named, was the son of Nun, an Ephraimite (I Chron. vii: 27), who first appears as commanding the Israelites by appointment of Moses during the fight with Amalek. Before the death of Moses Joshua was divinely named his successor, and formally invested with authority (xxvii: 18). He afterward led the Israelitish host in the conquest of Canaan. He died at the age of 110, and was buried at Timnath-serah, in Mount Ephraim (Joshua xxiv: 30).

The Book of Joshua.—The 6th book of the Old Testament, immediately succeeding the Pentateuch in the Hebrew. The events recorded are considered to have occupied about 25 years, from 1451 to 1426 B. C. The expression "to this day" occurs 14 times in the book, once of Rahab's dwelling among the people (vi: 25), and apparently of the life of Caleb (xiv: 14). Hence, all but the concluding verses have been attributed to Joshua, or one of the elders who outlived him.

JOSIAH, King of Judah. He succeeded his father, Amon, 641 B. C., at the age of eight years. He destroyed the idols and restored the worship of the true God, established virtuous magistrates for the administration of justice, and repaired the temple. He also caused the law of Moses to be sought for and preserved. He was wounded in a battle fought at Megiddo, against Necho, King of Egypt, and died in 610 B. C.

JOTHAM, King of Judah, 758 B. C., son and successor of Uzziah, or Azariah. He succeeded his leprous father at the age of 25 years, and reigned 16 years.

JOTUNS (yuh'tönz), in Northern mythology, immense giants and magicians who had command over the powers of nature, and lived in dark caves in their kingdom of Jötunheim, from which they waged perpetual war against the Æsir, the bright gods of Valhalla. Originaly they represented the destructive forces in nature.

JOUFFROY, THÉODORE SIMON (zhö-frwa'), a French philosopher; born in Pontets, Doubs, France, July 17, 1796. He became a pupil of Cousin, at Paris, and from 1817 onward taught philosophy at various educational institutions in Paris. Ill-health obliged him in 1838 to exchange his professorial chair for the post of librarian to the university. Jouffroy was not an original thinker, and founded no school. His merit is that he was the lucid interpreter of the teaching of the Scotch philosophers Reid and Dugald Stewart; he translated their works, adding critical introductions and notes. His own best books were: "Philosophical Miscellanies" (1833; new edition 1883); "Course in Natural Law" (1835); "Course in Æsthetics" (1843; new edition 1883). For some time Jouffroy was a member of the Chamber of Deputies; he was also well known as a journalist. He died in Paris, France, Feb. 4, 1842.

JOUGS (jögz), an instrument of punishment formerly used in Scotland, consisting of an iron collar which surrounded the neck of the criminal, and was fastened to a wall or tree by an iron chain.

JOULE (named from the eminent English physicist, James P. Joule), in electricity, the unit of heat and work; the voltcoulomb.

JOULE, JAMES PRESCOTT, an English physicist; born in Salford, England, Dec. 24, 1818. He studied under Dalton the chemist, made researches into electromagnetism, about 1840 turned his attention to the subject of heat, and ultimately established the theory of the mechanical equivalent of heat. His published work consists mainly of papers read before the Royal Society, of which he was made a fellow in 1850, receiving its medal in 1852, and the Copley medal in 1870. He received in 1878 a civil list pension of $1,000 in recognition of his services to science. His most important achievement was that of settling the mechanical equivalent of heat, which established that the quantity of heat capable of increasing the temperature of one pound of water 1° F. requires for its evolution the expenditure of mechanical energy represented by the fall of 772 pounds through the space of one foot. He died in Sale, Oct. 11, 1889. See JOULE'S LAW.

JOULE'S LAW, a law which relates to the work done by an electric current in overcoming the resistance in the circuit. It is substantially as follows: In any circuit carrying a current I, in ampères, the heat energy developed, where R is the resistance of the portion of the current under consideration, equals I^2R. This formula expresses, in watts, the activity of that portion of the current. Now the activity of one watt indicates the development of .24 calories of heat each second; consequently a complete expression of the heat set free is $H—I_2\times.24$ calories, equal to $IE\times.24$ calories a second. See JOULE, J. P.

JOURDAN, COMTE JEAN BAPTISTE (zhör-d*ong'*), a French marshal; born in Limoges, France, April 29, 1762. He entered the army at 16, and, after seeing service in North America, rose under the republic to the rank of a General of Division. In September, 1793, he obtained the command of the Army of the North, and on October 16, defeated the Austrians at Wattignies. In 1794 and 1795 he commanded the army of the Meuse and Sambre, and with it gained the victory at Fleurus, June 26, 1794, drove the Austrians back across the Rhine, took Luxemburg, and laid siege to Mainz. But on Oct. 11, 1795, he was defeated at Höchst, and thus compelled to retreat over the Rhine. Crossing this river again in 1796, he penetrated as far as Bavaria, but was there beaten by the Archduke Charles at Amberg and Würzburg; this discomfiture made him resign his command. In 1799 the Directory intrusted him with the command of the Army of the Danube; but he was again defeated by the Archduke Charles at Ostrach and at Stockach. The First Consul employed him in 1800 in the reorganization and administration of Piedmont; and on the establishment of the

empire in 1804 he was made a marshal and a member of the Council of State. In 1806 he was nominated governor of Naples, and afterward accompanied King Joseph Napoleon to Spain as chief of his staff. Louis XVIII. made him a count in 1819. But his republican principles led him to enter heartily into the revolution of 1830. He died in Paris, Nov. 23, 1833.

JOURNALISM, the gathering and distributing of news and opinion by the medium of newspapers. It has come to be one of the most important professions of civilized life.

The first printed newspaper was called "The Gazette," and was published in Nuremberg in 1457. No copy of this has been preserved. The oldest printed paper existing is the "*Neue Zeitung aus Hispanien und Italien*" (News from Spain and Italy), 1534, a copy of which is in the Nuremberg library. A weekly publication called the "Frankfurt Journal" was started by Egenolf Emmel, in 1615. Thus, Germany was first in the introduction of newspapers, as she had been in the art of printing. In 1622 a paper called "The Weekly News" was published in London. The first French paper, "Gazette of France," was started in 1631, and has, with few interruptions, continued to the present day. The first daily paper in France was issued in 1777. The official organ of Sweden, "Potosch Inrikes Tidning," was commenced in 1644; that of Holland, the "Haarlem Courant," in 1656, and the "St. Petersburg Gazette" in 1703. The first paper in Turkey was issued in 1827. The first American paper was published in Boston, Sept. 25, 1690. It was called "Publick Occurrences, both Foreign and Domestic," and consisted of three pages, two columns to a page, and one page blank. It was intended to be a monthly, but was suppressed on its first appearance. The Boston "News Letter," generally considered the first American paper, was commenced April 24, 1704, by John Campbell. It was a weekly, printed on a sheet of foolscap, sometimes on a half sheet, and existed 72 years, till the British troops evacuated Boston, 1776. Its circulation was 300. The Boston "Gazette" appeared in 1719. Philadelphia's first paper was published in 1719, and New York's first paper in 1725. The most important paper of Colonial times was the New York "Weekly Journal," issued in that city in 1733. Its editor, John Peter Zenger, was arrested for libel, the first case of the kind in the American courts. The oldest paper in New York, the "Commercial Advertiser," was founded by Noah Webster in 1793 under the name of the "Minerva." The first Western paper, called the "Sentinel of the Northwestern Territory," was founded by William Maxwell, in Cincinnati, 1793. The first national organ, the "National Intelligencer," was removed from Philadelphia to Washington in 1779. It had formerly been called the "Independent Gazetteer." It was followed by the "United States Telegraph." The "Union," 1852-1853, was the last official organ. The first religious paper, called "The Recorder," was issued at Chillicothe, O., 1814, the "Boston Recorder" appearing in 1816. The agricultural press was inaugurated by the "American Farmer," published in Baltimore in 1818, and the "Ploughboy" in Albany, 1821. The first successful commercial paper was the "New Orleans Prices Current," 1822. The first cheap paper was started in 1832 by Horace Greeley, in connection with Horatio Shepard, but it did not prove a success. Of the leading New York newspapers the "Herald" was established in 1835 by James Gordon Bennett, the "Tribune" in 1841 by Horace Greeley, and the "Times" in 1851 by Henry J. Raymond.

In 1837 reporters came into service and the sub-division and classification of editorial work began. In 1847 the Hoe press with its rapid work made a revolution in the press-room, and the following year the telegraph began to play an important part. In 1849 the New York Associated Press was formed. This was a combination of the leading papers of that city to facilitate the gathering of shipping news, and which has since been enlarged in its numbers and scope and has been followed by many similar combinations. In 1859 the stereotyping of newspaper forms by the paper-matrix process was introduced and the Bullock circular press came into use. In 1860 trade papers first made their appearance, and the manufacture of paper out of wood-pulp and straw greatly reduced the cost of that heavy item of expense, and increased the circulation by lowering the price of newspapers. The New York "Tribune" was the first paper to use the Atlantic cable to report the news of the Franco-Prussian War, in 1870. To-day American papers excel all others in their general makeup, attractive headlines, fine illustrations, and the variety and interest of their special articles. The Spanish-American War of 1898 called out the greatest possible enterprise and most lavish expenditure of money by our great daily papers. Despatch boats were hired at an expense of from $1,500 a day to $8,000 and $9,000 a month, some pa-

pers employing as many as from 5 to 10 craft of various kinds. Some of these followed closely the fleets at Manila and Santiago, and were under fire during the hottest of the battle. During the World War (1914-1918) American newspapers surpassed all others in the world in publishing the most complete and reliable story of the conflict. At the front, and back of the lines American newspaper correspondents served their journals with the earliest and most important news. Their achievements, and the prodigal expenditure of the American newspaper proprietors for cables marked an era in journalistic history.

JOURNEY WEIGHT, a term applied at the English mint to the weight of certain parcels of coin, which were probably considered formerly as a day's work. The journey weight of gold is 15 troy pounds, which is coined into 701 sovereigns, or 1,402 half-sovereigns. A journey weight of silver weighs 60 pounds troy, and is coined into 792 crowns, or 1,584 half-crowns, or 3,960 shillings, or 7,920 sixpences.

JOUST, a tilting match, a mock combat or conflict of peace between knights in the Middle Ages, as a trial of valor. The combatants used blunted spears, but were still subject to much danger from sudden blows on horseback. A joust differed from a tournament in that the latter was a conflict between many knights, divided into parties, and engaged at the same time; the joust was a separate trial of skill, where only one man was opposed to another.

JOUX (zhö), a lake of Switzerland, canton of Vaud, near the Jura and the French frontier, and 18 miles N. W. of Lausanne; length, 7 miles; breadth, 1 mile. It is overlooked by Mont Tendre, which, on the S. E. attains an elevation of 5,730 feet above the level of the sea.

JOUX, CHATEAU DE (shä-tō' duh), a fortress in the Jura Mountains, France, department of Doubs, commanding the route to Neufchâtel, 16 miles N. of the lake. It was successively the prison of Fouquet, Mirabeau, Toussaint l'Ouverture, and General Dupont.

JOVE, another name for JUPITER (*q. v.*).

JOVIAN (jō'vi-an), or **JOVIANUS** (-ā'-nus), **FLAVIUS CLAUDIUS**, a Roman emperor; born about 332. He was elected by the soldiers, A. D. 363, after the death of Julian, whom he had accompanied in his campaign against the Persians. In order to effect his retreat in safety, Jovian surrendered to the Persians the Roman conquests beyond the Tigris. He was a Christian, but he protected the heathens. After a reign of but little more than seven months, he died in Dadastana, Bithynia, Feb. 17, 364.

JOWETT, BENJAMIN, an English scholar; born in Camberwell, London, England, in 1817. He studied at Oxford, was elected to a fellowship in 1838, and became Regius Professor of Greek in 1855. In 1855 he published a commentary on the Epistles of St. Paul. In 1860 appeared his essay on the "Interpretation of Scripture" in the celebrated "Essays and Reviews," for which he was tried on a charge of heresy before the chancellor's court, but was acquitted. In 1870 he became master of Balliol, and in 1871 published his most important work, a translation of the "Dialogues" of Plato. He published translations of Thucydides (1881) and the "Politics" of Aristotle (1885). In 1882 he was elected vice-chancellor of the university. He died Oct. 1, 1893.

JUAN II., DON (Hö-*än*), a natural son of Philip IV. of Spain, and of Maria Calderona, an actress; born in 1629; made grand prior of Castile; commanded the Spanish army in Italy in 1647, and took the city of Naples; subjugated Barcelona in 1652, but, being afterward unsuccessful, was exiled. Under Charles II. he was recalled to Madrid, made prime minister, and died in 1679.

JUAN DE FUCA (dā fō'kä), or **FUCA, STRAIT OF**, the strait between Vancouver Island and the State of Washington on the W. coast of North America.

JUAN FERNANDEZ (fer-nän'deth), called also Mas-a-tierra ("nearer the mainland"), a rocky island in the Pacific Ocean, 420 miles W. of Valparaiso, Chile, to which it belongs. It is 13 miles long and four broad, and is for the most part a series of rocky peaks of volcanic origin, the highest of which, Yunque, is 3,000 feet above sea-level. The trees are mostly ferns. The sandal-wood trees are nearly all exterminated. Horses, pigs, and goats run wild. The island was discovered by the Spaniard whose name it bears in 1563, and was frequently visited by buccaneers down to its occupation by the Spaniards in 1750. Here Alexander Selkirk, a buccaneer, a native of the Scotch fishing village of Largs, lived in solitude, 1704–1709. His story is supposed to have suggested the "Robinson Crusoe" of Defoe. When Spain lost her South American colonies Juan Fernandez fell to Chile, which used it as a penal settlement, 1819-1835. It is usually in-

habited by a few Chilean seal and sea-lion hunters; and in 1877 it was leased by the Chilean government to a Swiss, who established a small colony there.

JUAREZ, BENITO (hō-ä′reth), President of Mexico; born of Indian parents in Gueletao, Oaxaca, March 21, 1806. He became an advocate, and as governor of his native state (1847–1852) was distinguished both for his ability and his honesty. Exiled during the dictatorship of Santa Ana, he returned when the republic was restored, and in 1857 was elected president of the Supreme Court (equivalent to vice-president of the nation). On the overthrow of the Liberal president by the clerical party in 1858 Juarez assumed the executive, but was compelled to retire to Vera Cruz, where his government was recognized by the United States in 1859, and whence he issued decrees abolishing religious orders and confiscating Church property. In January, 1861, he was able to enter the capital, and in March was elected president for four years. In December of the same year the allied forces of England, France, and Spain occupied Vera Cruz; in April the British and Spanish withdrew, but the French remained, and declared war against Juarez, who retreated gradually to the N. frontier, and remained for nearly a year at El Paso del Norte. He entered Mexico City again in July, 1867, MAXIMILIAN (*q. v.*) having been shot meanwhile by order of court-martial. Juarez was again elected president for four years—years disturbed by repeated revolutionary attempts. In 1871 he was re-elected, and the risings became even fiercer and more frequent. He died in Mexico, July 18, 1872.

JUBA (jö′bä), a great river of Eastern Africa, which flows into the Indian Ocean at about lat. 0° 5′ S., and whose mouth marks the N. boundary of the coast placed under British control by the agreement with Germany in 1890.

JUBA (jö′bä), the name of two Kings of Mauritania and Numidia, important kingdoms of Northern Africa, prior to and after the fall of Carthage. JUBA I. flourished about half a century B. C., and, having declared for Pompey in the struggle for mastery among the first triumvirate, on the murder of Pompey, Cæsar invaded the kingdom of Mauritania, and Juba being defeated and compelled to fly, in despair fell on his sword 42 B. C. JUBA II., the son of the former, was carried prisoner to Rome while yet a youth, when Cæsar drove his father from the throne. On the fall of the second triumvirate, Augustus Cæsar, who had taken a strong regard for Juba, married him to one of Antony's daughters, Cleopatra, and restored him to his father's throne. Juba possessed great judgment and considerable learning, and left behind him "A History of Arabia," "Antiquities of Syria," and "A History of Rome," written in Greek. He died in A. D. 17.

JUBAL, son of Lamech and Adah in the Genesis story, the inventor of the harp and organ, probably general terms for stringed and wind instruments. The meaning of the name is most likely significant, connected with *yobel*, "jubilee."

JUBILATE, the 100th Psalm, which in the Vulgate begins *Jubilate Deo omnis terra*. It was added to the English Prayer-book in 1552, to be sung after the Second Lesson, instead of the *Benedictus*, when that canticle occurs in the chapter for the day; but it is used at other times as well, and always at thanksgivings.

JUBY (jö′bē), **CAPE**, a cape on the W. coast of Africa, 100 miles S. of the frontier of Morocco, with an anchorage. A trading settlement of an English company was established in 1879–1889.

JUCH, EMMA ANTONIA JOANNA (MRS. FRANCIS L. WELLMAN), an American singer; born in Vienna, Austria, July 4, 1865; brought to the United States in infancy; received a normal school education; made her début as an operatic singer at Her Majesty's Grand Italian Opera, London, in June, 1883; subsequently, prima donna Theo. Thomas Opera Co., and then of the Emma Juch Grand English Opera Company. In 1894 she married F. L. Wellman of New York and retired from the stage.

JUDÆA (-dē′ä), a term applied after the return of the Jews from exile to that part of Palestine bounded E. by the Jordan and the Dead Sea, N. by Samaria, W. by the Mediterranean, and S. by Arabia Petræa. See PALESTINE.

JUDAH, the 4th son of Jacob and Leah, and the head of the tribe of that name. It was to Judah that Jacob declared that the scepter should not depart from it till the coming of the Messiah; a prediction fulfilled in the advent of Christ.

JUDAH, KINGDOM OF, a nation, which was formed in reality on the death of Solomon and the secession of the Ten Tribes forming the kingdom of Israel, composed of the two remaining tribes of Benjamin and Judah. The kingdom of Judah endured for 133 years after the destruction of its rival, and was brought

to a close by Nebuchadnezzar, 588 B. C., who carried the vanquished inhabitants to Babylonia and distributed them beyond the Euphrates. After their return from captivity this tribe in some sort united in itself the whole Hebrew nation, who from that time were known only as Judæi, Jews, descendants of Judah. Judah—when named in contradistinction to Israel, Ephraim, the kingdom of the Ten Tribes, or Samaria—denotes the kingdom of Judah and of David's descendants. One of the principal distinctions of this tribe is that it preserved the true religion and the public exercise of the priesthood, with the legal ceremonies in the temple at Jerusalem; while the Ten Tribes gave themselves up to idolatry.

JUDA-HAKADOSH, a famous rabbi in the time of the Emperor Aurelius to whom he was preceptor. He is said to have been the original compiler of the Mischna, or the Talmudical text.

JUDAISM, one of the most important faiths in the world, which Christians, as well as Jews, consider to have been revealed by God.

Ancient Judaism.—The earliest form of the Jewish faith was patriarchal. On the night of the Israelitish departure from Egypt an essential part of Judaism, in its second or more developed form, was begun by the institution of the passover (Exod. xii., xiii.). At Sinai two tables of stone were given containing the 10 commandments. Subsequently there was revealed to Moses, to be by him communicated to the people, a complicated system of ceremonial observances, interspersed with judicial enactments. A splendid tabernacle—*i. e.*, a tent—on a divine model, was erected as the habitation of Jehovah, in the journeyings through the wilderness, to be in due time followed by a temple, when the people were permanently settled. A hereditary priesthood was consecrated, and a theocratic form of government maintained, the supreme civil ruler, whether lawgiver, military leader, judge, or king, being regarded as the vice-gerent of God. Ancient Judaism was the precursor of Christianity and the germ from which it sprang; and Christians generally believe that all the ceremonies, sacred personages, etc. of the older economy were types and shadows of the life and sufferings of Jesus Christ (Heb. ix., x., etc.).

Modern Judaism.—After the Jews lost their independence, and especially after the destruction of Jerusalem, the judicial regulations of the Mosaic law ceased to be observed. In the latter half of the 4th century arose the Jerusalem, and in the 6th the Babylonian Talmud, containing the rules, constitutions, precepts, and interpretations intended to supplement those of the Old Testament. See HEBREWS: JEWS.

JUDAS ISCARIOT, one of the 12 apostles, and betrayer of his Master. For the paltry sum of about $15 he engaged with the Jewish Sanhedrim to guide them to a place where they could seize his Lord by night without danger of a tumult. But when he learned the result, a terrible remorse took possession of him; not succeeding in undoing his fatal work with the priests, he cast down before them the price of blood, crossed the gloomy valley of Hinnom, and hanged himself (Matt. xxvii: 3–10); or fell headlong and burst asunder (Luke xxii.; in Acts i: 18).

JUDAS MACCABÆUS. See MACCABEES.

JUDAS, or **JUDE**, brother of James, one of the 12 apostles. Matthew and Mark call him Thaddæus surnamed Lebbæus. Nothing is known of his life.

The General Epistle of Jude.—A short epistle thought by many to have been penned by Jude. So much of Jude's epistle is like II Peter, that portions of the one seem to have been transcribed from the other.

JUDAS' TREE, a genus of trees of the natural order *Leguminosæ*, sub-order *Cæsalpineæ*. The common Judas' tree is a native of the S. of Europe and of the warmer temperate parts of Asia. It has almost orbicular, very obtuse leaves. The flowers, which are rose-colored, appear before the leaves. There is a legend that Judas hanged himself on a tree of this kind. The American Judas' tree is very similar, but has acuminate leaves. The flower buds are frequently used in salads and pickled in vinegar. The wood of both species is very beautiful, veined with black, and takes an excellent polish. The young shoots of the American Judas' tree are used in domestic dyeing and impart a fine color to wool.

JUDD, SYLVESTER, an American novelist and theologian; born in Westhampton, Mass., July 23, 1813. He wrote a remarkable novel "Margaret" and "Richard Edney," another romance, "Philo" a poem, and "The Church," discourses. He died in Augusta, Me., Jan. 20, 1853.

JUDE. See JUDAS.

JUDGE, a legal officer. In ordinary language, a civil officer invested with power to hear and determine causes, civil

or criminal, and to administer justice in courts held for that purpose; or a person authorized or empowered in any way to decide a dispute or quarrel.

In Law.—The National and State systems of judicature in the United States comprise in their list of officers judges of various degrees of dignity and of widely variant functions. In most of the States the most numerous class are the presiding officers of courts of oyer and terminer, criminal courts, courts of correction, etc., the names given similar tribunals in the different commonwealths varying. They have in most instances both criminal and (tc a certain extent) civil jurisdiction, but in other cases are restricted entirely to one or the other function. Of a higher dignity than these are the circuit judges, who in some commonwealths have large supervisory and reviewing powers, while the whole system is presided over by the judges of the supreme State courts. The United States judges range in dignity from district to supreme court officials. Judges are recipients of office in divers ways—some being elected by the people, others by the Legislature; and yet others are appointed by the President or by governors of the States.

Jewish History.—Judges were certain remarkable individuals raised up in Israel after the death of Joshua and prior to the establishment of the Jewish monarchy. At that time there was little unity among the tribes, each of which, like a Scottish Highland clan, looked up to its own individual chief, and not often to any higher human authority. All acted in the Jewish theocracy as vicegerents of Jehovah. The series of events, oftener than once repeated, was first, that the people were seduced into idolatry; next, that as a punishment for this, they were conquered, and placed under the yoke of a foreign oppressor; then a judge arose who under God set them free, and the land had rest normally for 40 years. The Hebrew name Shophetim sometimes means princes as well as judges. The functions of the judge in some respects resembled those of a Roman dictator, and in others those of a Mohammedan Mahdi.

JUDGE-ADVOCATE-GENERAL, the head of the bureau of justice in the Army. He is, in the United States, the legal adviser of the Secretary of War and holds the rank of brigadier general. He keeps the records of all trials by court-martial, and of all the reports of military commissions. Unlike the United States, the Judge-Advocate-General in England is selected from the civil judiciary and is not, previous to his appointment, a military officer.

JUDGES, BOOK OF, the 7th book in order of the Old Testament. It was named Judges because at the period to which it refers Israel was ruled by men of that designation (See JUDGE). It consists of five sections: a first introduction (i-ii:5), a second one (ii: 6-iii: 6), the main portion or consecutive narrative (iii: 7-xvi: 31), the first appendix (xvii-xviii.), and the second one (xix-xxi.), Two authors seem to have been at work on it, each falling back on ancient documents. It has been always accepted as canonical. In the New Testament it is referred to in Acts xiii: 20 and Heb. xi: 32.

JUDGMENT, in law, a determination, decision, or sentence of a judge or court in any case, civil or criminal. In logic, the comparing together in the mind two of the notions, or ideas, which are the objects of apprehension, whether complex or incomplex, and pronouncing that they agree or disagree with each other, or that one of them belongs or does not belong to the other. Judgment is therefore affirmative or negative; as, snow is white; all white men are not Europeans. In metaphysics, that faculty of the human mind by which judgments are formed. Kant defines it as "the faculty by which the particular is conceived as contained under the universal."

In Scripture, (1) Singular: (a) The sentence of a judge. (b) Justice (Is. xxxiii: 5). (c) The punishment which justice inflicts; specially, a calamity sent by God as a penal infliction on account of national or other sin (Exod. xii: 12; II Chron. xx: 9, xxii: 8). (2) Plural: The civil and criminal enactments of the Mosaic code, as distinguished from the ceremonial and the moral laws (Exod. xii: 12; Ps. cxix: 7, 13, 20, 39, 43, 62, etc.) Judgment of God, a term applied to several of the old forms of trial by ordeal, as single combat, walking upon red-hot plowshares, etc.

JUDGMENT CREDITOR, one to whom a court of law has awarded a certain sum of money as damages, etc., payable by the other party in the case.

JUDGMENT DAY, in theology, the day on which God shall judge the world by the instrumentality of Jesus (Acts xvii: 31), meting out rewards and punishments as justice may require (Matt. xxv: 31–46). When 1,000 years from the birth of Christ were almost completed, it was generally believed that the judgment day was at hand, and every means was adopted to conciliate the

Church and gain the favor of its Divine Lord. Among other steps adopted was to hand over estates as no longer needed to the ecclesiastical authorities, the reason assigned being thus expressed *Appropinquante mundi termino* (the end of the world being now at hand).

JUDGMENT DEBT, a debt secured to the creditor by a judge's order, and in respect of which he can at any time attach the debtor's goods and chattels. Such debts have the preference of being paid in full, as compared with simple contract debts.

JUDICIARY, that branch of the government which is concerned with the administration of justice, in cases civil or criminal; the system of courts of justice in a country; the judges collectively.

National.—Article III. of the Federal Constitution provides for the establishment of United States courts to have jurisdiction both in law and in equity. This jurisdiction is in general distinct from, but is sometimes concurrent with, that of the State courts. The system which Congress adopted at its first session remains unaltered in its essentials to the present time, except for the addition of the Court of Claims in 1855. The judges are nominated by the President and confirmed by the Senate. They retain office during good behavior. The judicial power is vested in a Supreme Court, Circuit Courts, District Courts, a Court of Claims, a Court of Customs Appeal, District of Columbia courts, and a court for China. The Supreme Court has original jurisdiction only of "cases affecting ambassadors, other public ministers and consuls, and those in which a State shall be a party"; but cases decided in the other Federal courts, under certain prescribed conditions, can be reviewed by the Supreme Court by virtue of its appellate jurisdiction. The limits of the original jurisdictions of the District and Circuit Courts, and the appellate jurisdiction of the latter over the former, are provided by law. Besides other matters, the Circuit Court has exclusive jurisdiction of patent suits and the District Court of admiralty cases. The Court of Claims has jurisdiction of claims against the United States. The justices of the Supreme Court, besides their functions as such, are each assigned to one of the circuits, being then known as circuit justices. There is also a separate circuit judge for each circuit, and a district judge for each district. Circuit Courts may be held by the circuit justice, by the circuit judge or by the district judge sitting alone, or by any two of these sitting together. The judges of each circuit and the justice of the Supreme Court for the circuit constitute a Circuit Court of Appeals. As constituted at first, the Supreme Court consisted of a chief-justice and five associate justices, but the number of the latter has been changed from time to time, and there are at present eight. Besides these regular Federal courts, the Senate sits when necessary as a court of impeachment; the District of Columbia has a Supreme Court over which the Supreme Court of the United States has appellate jurisdiction; and Territorial Courts are provided, the judges of which are nominated for terms of four years by the President, and confirmed by the Senate, and over which the Supreme Court has also appellate jurisdiction. Cases decided in the highest court of any State may also be reviewed by the United States Supreme Court, but only when Federal questions are involved; that is, when the controversy deals with the Constitution, laws or treaties of the United States.

State.—The judicial systems of the several States are too widely different to permit of explanation. In some of them courts of equity are distinct from those of law, while in others the same tribunals exercise both functions, and in still others all distinction between actions at law and suits in equity is abolished. The manner of selecting judges also varies in different States and from time to time. At the period of the formation of the United States, the election of judges by the people was unknown, except in Georgia. At the present time, however, the people elect judges in 24 of the States. Judicial terms vary from 2 to 21 years, the average being 10 years. The question has been much discussed whether the judiciary should be elective by the people, or appointive by the executive or Legislature, or "councils of appointment." Most of the States have decided in favor of the former, but many of these have found it necessary to lengthen the terms of their elective judiciary in order to lessen the necessary evils of the system, which tends to supplant judicial justice by political shrewdness.

JUDITH, the 4th of the apocryphal books. The narrative opens with the "twelfth year in the reign of Nabuchodonosor, who reigned in Nineve, the great city." That potentate, finding his armies thwarted in their progress to the W. resolved to take signal vengeance. His chief opponents were the Israelites, who fortified themselves in Bethulia. While Holofernes, his general, was besieging

this stronghold, the heroine of the book, Judith, the beautiful widow of Manasses, went forth to the Assyrians, pretending that she had deserted her people. She fascinated Holofernes, who after a time took her to his tent, where, as he was lying drunk, she cut off his head, escaping back with it to the fort at Bethulia. On the loss of their leader the Assyrians fled, the Israelites pursuing and inflicting on them great slaughter. The book apparently professes to have been penned just after the events recorded (xiv: 10); but the earliest known historic testimony to its existence is by Clement of Rome (Ep. i: 55), though it probably existed as early as 175 to 100 B. C. The ablest critics consider it a fiction rather than a genuine history.

JUDSON, ADONIRAM, an American missionary; born in Malden, Mass., Aug. 9, 1788; was graduated at Brown University in 1807 and studied theology at the Andover Theological Seminary. In April, 1810, he made application to the London Missionary Society to go to "India, Tartary, or any part of the Eastern continent." In February, 1812, he sailed with his wife for Asia. During the voyage he was converted from the Congregational faith to that of the Baptist Church. In 1814, when the Baptists of the United States organized a missionary union he was taken under its care. He settled in Burma; mastered the language; and labored there for nearly 40 years. During the last 25 years of his work there were about 20,000 conversions among the Karens. He was the author of a Burman grammar; a Pali dictionary, a Burman dictionary; and a complete Burman Bible. He died at sea, April 12, 1850.

JUDSON, EDWARD, an American clergyman; born in Moulmein, Burma, Dec. 27, 1844; son of Adoniram Judson; came to the United States in 1850; was graduated at Brown University in 1865; Professor of Latin at Colgate University in 1867–1874; pastor of the First Baptist Church of Orange, N. J., in 1875–1881. He then accepted the charge of the Berean Baptist Church of New York City, where he later built the Judson Memorial Church, becoming its pastor. Published a "Life" of his father in 1899. Died in 1914.

JUDSON, HARRY PRATT, an American educator; born in Jamestown, N. Y., Dec. 20, 1849; became head Professor of Political Science in the University of Chicago in 1892. Since 1906 President of University of Chicago. Member of Rockefeller Foundation 1913. Chairman China Medical Board, 1914. His works include: "Cæsar's Army, a Study of the Military Art of the Romans" (1885); "Europe in the Nineteenth Century"; "The Growth of the American Nation."

JUGGERNAUT, in Hindu mythology, one of the 1,000 names of Vishnu, the second god of the Hindu triad. Juggernaut is Vishnu, especially in his 8th incarnation, Krishna. The great seat of his worship is at Pûrî, in Orissa, where he is associated with his brother Balbhadra, Baldeo, or Balaram, and their sister Sabhadra. The idols have no legs, and only stumps of arms; the heads and eyes are very large. The two brothers have arms projecting horizontally from the ears. They are wooden busts of about 6 feet high. Balaram is painted white, Juggernaut black, and Sabhadra yellow. Juggernaut's car is 43½ feet high. It has 16 wheels, each 6½ feet in diameter. The brother and sister have also cars. There are 13 festivals each year. The chief is the Rath Jattra, or Car Festival, at which the three idols are brought forth, being dragged out in their cars by the multitudes of devotees. Formerly a few fanatics threw themselves beneath the wheels; this is not now permitted. The present temple of Juggernaut was completed in 1198, at an expense of nearly $2,500,000. The British obtained possession of it in 1803. They found that the pilgrims had paid a tax to the Mahrattas. In 1806 the Anglo-Indian British government took the pilgrim's tax and directed the worship of the temple. In June, 1851, the government ceased to have any connection with the temple.

JUGGLER, one who practices or exhibits tricks by sleight of hand. The juggler's art is one of great antiquity, and in early times was employed as a means of sustaining the power of the priesthood. The magicians of the ancient Egyptians, Persians, etc., were of this class; and doubtless most of the miracles ascribed to the heathen deities were effected by sleight of hand. In the East, particularly in India, and China, jugglery is largely practiced, and brought to great perfection as an art. Many of the tricks of modern Eastern jugglers have not yet been found out.

JUGLANDACEÆ (-dā'se-ē), the walnut tribe, a natural order of exogenous plants, chiefly found in North America. They are trees with alternate pinnate stipulate leaves, and unisexual flowers, the males in catkins, the females in terminal clusters or loose racemes. Besides

the walnut the order includes the butternut and hickory.

JUGO-SLAVIA, Kingdom of the Serbs, Croats and Slovenes (literally the land of the Southern Slavs), represents what has been for the past generation a national ideal, only realized since the close of the World War. Jugo-Slavia, as a territory, includes Serbia, Montenegro, Bosnia, Herzegovina, Dalmatia and Croatia, all of which countries are inhabited by peoples of Serbian blood, speaking only slightly varying tongues, and whose most perfect literary form is represented by the Serbian. Among all these there has naturally been a desire to unite into one single nationality. This desire has manifested itself in two ways; the ambition on the part of the ruling house of Serbia to unite all these peoples under an imperial Serbian Empire, a "Greater Serbia;" and, on the other hand, the patriotic wish of the common people to form a union, or confederacy, of all these Slavic states under a democratic government. This latter movement is more properly expressed in the name Jugo-Slavia. But the two purposes have commonly worked together with the single aim of first freeing the greater part of the Southern Slavs from Austrian domination. This movement toward Serbian nationality may properly be considered to have been one of the chief, if not the chief, causes of the World War.

Practically all of the Balkan Peninsula, with the exception of Greece, Albania and Rumania, is populated by Slavic peoples. All of these were submerged more or less by the Turkish invasion during the late Middle Ages. With the development of Christian civilization, however, the Turks were gradually driven back, chiefly by the two big empires, Russia and Austria. At times the little Balkan nationalities were compelled to call on them for aid, but with the inevitable result that they were compelled to pay the price asked, which was annexation. Thus their national aspirations were crushed by their very deliverers. Gradually they came to realize that if they were to gain independence they must fight their own battles.

In 1878 the Slavs of the Balkan Peninsula planned an uprising. Serbia at that time, limited to a small territory in what is known as Serbia proper, then enjoyed a large measure of local autonomy, while Montenegro, on account of its impregnable position in the mountains, has been practically independent during all the Turkish occupation. Bulgaria, however, was entirely subjugated, and here the uprising was precipitated. It was cruelly suppressed, with such horrors that Russia immediately made them the pretext for a war of "liberation."

The Turks were driven back by the Russians, Serbia and Rumania assisting. As a result of the objections of the other European nations, however, Bulgaria, which was liberated, could not be annexed, but was created into a free state, under a Prince, nominally subservient to the Sultan. Serbia became entirely free, under her King. But Bosnia and Herzegovina were handed over to the administration of Austria, though the Sultan was still the nominal sovereign.

This was a sore blow to the aspirations of the Serbs, who had hoped to gain a "Greater Serbia" as a result of their assistance in driving the Turks back toward Constantinople. From this time on began the Jugo-Slav movement, radiating from Belgrade, the capital of Serbia. Naturally, this propaganda ran counter to the ambitions of both Russia and Austria, but especially of the latter, for Austria desired to incorporate Bosnia and Herzegovina within her empire, as she had already done with Dalmatia and Croatia. Russia desired to acquire Bulgaria and the territory down to and including Constantinople. But Bulgaria had her own nationalistic aspirations, and in places, especially down in Turkish Macedonia, these overlapped with those of Serbia. For this reason these two centers of nationalism, Bulgaria and Serbia, found it almost impossible to cooperate, and thereby weakened their common front against the two big empires advancing on them down the Peninsula.

In 1908 Austria issued an official proclamation formally annexing Bosnia and Herzegovina. This was a direct blow at the aspirations of the Jugo-Slavs. But Serbia was in no position to make war on Austria. Instead she came to an understanding with Bulgaria, and the two agreed to unite temporarily and by their joint effort drive the Turks out of Europe and divide Macedonia between them. Greece and Montenegro joined the Alliance. In 1912 their plans matured and the First Balkan War was precipitated, with unexpected success to the Balkan allies. For the moment it seemed that two powerful Balkan nationalities were to be the result.

But this could not be tolerated by either Austria or Russia. Both these big empires began intriguing against the co-operative spirit which had developed between the Bulgars and Serbs. Austria insisted that Albania remain free, and denied Serbia the right to an opening on the Adriatic, which had been agreed

to between Serbia and Bulgaria. She also stirred up the greed of the reigning house of Bulgaria, promising support if Bulgaria would attack Serbia and take from her some of the territory which was to be hers. These intrigues succeeded. Bulgaria made war on Serbia, was badly beaten, and Serbia acquired a large area of territory in Macedonia, much to the disappointment of Austria, and so bringing her nearer by one step to the final ideal.

This brought the situation to a critical point. Austria was now genuinely alarmed over the growth of Serbian nationalism. The dormant patriotism of the Serbs in the Austrian provinces had been profoundly awakened by the success of Serbia, and the Jugo-Slav movement took on vigorous growth. Austria responded by repressive measures, and began planning a war which should once and forever crush Serbia. On the other hand, Serbia, if not officially, at least unofficially encouraged the nationalistic movement in the Austrian Slav provinces.

The crisis occurred when the young Serb revolutionary agitator, Gabrilowitz, on June 28, 1914, assassinated the Archduke Francis Ferdinand, Heir Apparent of Austria-Hungary, and his morganatic wife, during their visit to the capital of Bosnia, Sarajevo. This was the pretext for the war of annihilation which Austria was planning, and hostilities were accordingly precipitated.

But the war spread as Austria had not anticipated, bringing in elements on which she had not figured. First of all, when Austria, in the very beginning of the war, attempted to invade and conquer Serbia, she was severely defeated, three times in succession, and was eventually compelled to call on Germany to send troops to her aid. For the time being the Serbian armies were driven out of Serbia, the surviving portions finding refuge on the Island of Corfu, under the protection of the Allies. After recuperating for a year, they again took the field beside the Allied troops in Macedonia and were foremost in breaking the Teutonic front and marching victoriously back into Serbia.

This decisive victory on the Macedonian front, in the fall of 1918, was the beginning of the end of the Austrian Empire. So shattered were the component parts of the Empire that immediately the Jugo-Slavs were able to take steps toward the consolidation of the great state which had been their national ideal.

In August, 1918, before the final defeat of the Central Empires, a Jugo-Slav Congress was held at Laibach, which was attended by delegates from all the Slav peoples under Austrian dominion. Austria formally promised the convention that the Slavic states should have full autonomy under Austrian sovereignty, which should be merely nominal, but even this far-reaching offer was unsatisfactory. On Nov. 3, 1918, a Provisional Government was proclaimed at Agram, of which Joseph Pogoanik, formerly vice-president of the lower house of the Austrian Parliament, was elected President. On Dec. 21, 1918, it was announced that an agreement had been reached with Serbia, whereby that nation was to join the Jugo-Slav nation, the latter naturally, to be changed from a republic to a monarchy. A new ministry was formed, under the Premiership of N. P. Pasitch, former Minister of the Interior of the Serbian Cabinet, and Prince Alexander of Serbia was named as Prince Regent. In January, 1919, the new government was established at Belgrade, and in the following March the first session of the Jugo-Slav Parliament was held. Hitherto there had been some doubt as to Montenegro joining, but on April 20, 1919, the Montenegrin National Assembly voted overwhelmingly in favor of it. On Aug. 3, 1919, the Pasitch Cabinet resigned, and a new one was formed under the leadership of Liouba Davidovitch, a radical. This Ministry lasted only until Sept. 15, 1919, when it resigned on account of the treaty with Austria, with which republic the Jugo-Slavs had entered into active hostilities during the previous May, as a result of boundary disputes. The succeeding Cabinet was formed under Prof. Pavlovitch. Meanwhile a serious dispute had arisen between the new Jugo-Slav State and Italy, over part of the Dalmatian coast, Fiume being the center of the disputed territory. The decision of this problem, however, became a question of international import and the subject of diplomatic negotiations between all the Allied governments during the year 1920. It was finally settled in December, 1920, by the cession of Dalmatia to Jugo-Slavia, and the establishment of Fiume as an independent city. See ITALY.

JUGULAR VEINS, veins of the neck which return the blood from the head; they are three in number, the external, the anterior, and the internal jugular.

JUGURTHA (-gur-thä), King of Numidia, son of Mastanabal, who was a natural son of Masinissa. He was carefully educated with Adherbal and Hiempsal, the sons of his uncle Micipsa,

who succeeded Masinissa on the throne. After Micipsa's death Jugurtha soon caused Hiempsal to be murdered (119 B. C.)., whereupon Adherbal fled to Rome. Jugurtha succeeded in bribing great part of the Roman Senate, and obtained a decision in his favor, freeing him from the charge of the murder of Hiempsal, and assigning him a larger share of the kingdom than was given to Adherbal (117 B. C.). But Jugurtha soon invaded Adherbal's dominions, and, notwithstanding injunctions by the Romans to the contrary, besieged him in the town of Cirta (112 B. C.), and caused him and the Romans who were captured with him to be put to death with horrible tortures. Thereupon war was declared against Jugurtha by the Roman people; but, by bribing the generals, Jugurtha contrived for years to baffle the Roman power. He was finally delivered up to the Romans, and was carried in the triumph of Marius, Jan. 1, 104 B. C., and then flung into a dungeon to die of hunger. Our interest in Jugurtha is due to Sallust's "Jugurthine War."

JUJUBE, the popular name of a genus of spiny and deciduous shrubs or small trees, genus *Zizyphus*, natural order *Rhamnaceæ*. The species are numerous, and of several the fruit, which is blood-red or saffron-colored with a sweet granular pulp, is wholesome and pleasant to eat. The common jujube (*Z. vulgaris*) is a native of Syria, from which it was introduced into Europe. The fruit is dried and forms an article of commerce. *Z. Lotus*, a shrub two or three feet high, is a native of Persia and the N. of Africa. *Z. spina Christi*, or Christ's thorn, is said to have furnished the branches of which our Saviour's crown of thorns was made. Also a confection made of gum arabic or gelatine, sweetened and flavored.

JUJUY (Hö-Hwē'), the extreme N. province of the Argentine Republic; a mountainous tract, bounded on the W. and N. by Bolivia; area 18,977 square miles; pop. about 77,000. Its minerals are rich. The chief industries are agriculture and cattle-raising; sugar and wheat are the principal crops. The exports consist of cattle, mules, fruit, chicha brandy, skins, gold-dust, and salt. Capital Jujuy, on the San Francisco river, has a custom-house, national college, etc., pop. about 6,000.

JUKES, JOSEPH BEETE, an English geologist; born near Birmingham, England, Oct. 10, 1811. He was graduated at Cambridge in 1836; in 1839 appointed geological surveyor of Newfoundland; in 1842 took part as naturalist in the exploration and survey of Torres Strait, New Guinea, and the E. coast of Australia; surveyed part of North Wales for the Geological Survey of the United Kingdom (1846–1850); in 1850 became local director of the survey in Ireland. He wrote "Excursions in and About Newfoundland" (1842); "Narrative of the Surveying Voyage of H. M. S. 'Fly,' in Torres Strait, etc." (1847); "A Sketch of the Physical Structure of Australia" (1850); "Student's Manual of Geology" (1857, 5th ed. 1890); etc. He died in Dublin, Ireland, July 29, 1869.

JULEP, in medicine, a demulcent, acidulous, or mucilaginous mixture. Also a fancy beverage composed of whisky, brandy, or other spirituous liquor, mixed with sugar, crushed ice, and sprigs of young mint; called also mint-julep.

JULIA GENS, one of the most ancient patrician houses at Rome, of Alban origin, and removed to Rome by Tullus Hostilius on the destruction of Alba Longa. It claimed descent from the mythical Iulus, the son of Venus and Anchises. The most distinguished family of the Gens was that of Cæsar.

JULIAN, or JULIANUS, FLAVIUS CLAUDIUS, surnamed THE APOSTATE, Roman emperor; born in Constantinople, probably Nov. 17, 331. He was the youngest son of Constantine the Great, and was educated in the tenets of Christianity, but apostatized to paganism. In 354 he was declared Cæsar, and sent to Gaul, where he obtained several victories over the Germans; and in 361 the troops in Gaul revolted from Constantius and declared for Julian. During the lifetime of his cousin Constantius he made profession of the orthodox faith; but on succeeding to the throne he threw off all disguise, reopened the heathen temples, and sought to restore heathen worship; while he labored both by his pen and authority to destroy Christianity. He took from the Christian churches their riches and divided them among his soldiers. He sought likewise to induce the Christians, by flattery or by favor, to embrace paganism; and published an edict that the name of Christian should be abolished. His malice was further evinced by extraordinary indulgences to the Jews, and an attempt to rebuild the temple at Jerusalem, that the prophecy of Christ might be falsified; but it is said that flames of fire rose from beneath and consumed some of the workmen, by which miraculous interposition the design was frustrated. He was killed in 363 in his expedition against the Persians.

JULIAN, CARDINAL; born in 1398; was deputed by Pope Eugene IV. to counsel Ladislaus, King of Hungary, to break the peace concluded with Amurath II. A long and disastrous war was the result, during which the Christian army was defeated at Varna, in 1444. He presided at the council of Basle.

JULIAN EPOCH, the epoch or commencement of the Julian calendar. The first Julian year began with Jan. 1, 46 B. C., and the 768th from the year assigned to the foundation of Rome.

JULIAN PERIOD, a period of 7,980 years, produced by multiplying 19 (the lunar cycle) by 28 (the solar cycle), and 15 (the Roman indiction). It began 4,713 years before the Christian era.

JÜLICH (yü'li*h*), a town of Rhenish Prussia, on the Roer, 20 miles N. E. of Aix-la-Chapelle, the Juliacum of the Romans. Till its fortifications were razed in 1860 it ranked as a fortress of the second class. From the 12th century Jülich was the capital of an independent countship, created a duchy in 1356. In 1801 the duchy was annexed to France, in 1814 to Prussia. Pop. about 7,500.

JULIUS I., Pope, succeeded to the papal see on the death of Mark in 337, and is celebrated for the part he took in the Athanasian Controversy. He died in 352.

JULIUS II. (GIULIANO DELLA ROVERE), Pope; born in Albezuola, in 1443. He was nephew of Pope Sixtus IX., bishop successively of several sees, last of Avignon, and in 1471 became cardinal.

He had been exiled by Alexander VI., but had influence to procure the election of Pius III., in September, 1503, and on his death, a month later, succeeded him. He recovered part of the Romagna from Cesare Borgia, Bologna from the Bentivoglio, and Perugia from the Baglioni. Against the Venetians, who held part of the Romagna, he concluded, in 1508, the iniquitous League of Cambray, with the emperor, Louis XII. of France, and the King of Aragon. After much fighting the Venetians submitted, and he made peace with them in 1510. He then made war on the French, to drive them out of Italy; conducted in person the siege of La Mirandola, and took it in 1511; saw his army defeated at Bologna, and the city again in the hands of the French, and was compelled to retire to Rome. A council being convoked at Pisa by the King of France, Julius convoked another at Rome; excommunicated Louis XII., and put his kingdom under an interdict in 1512; and died early in the following year. He was a friend of the rising literature of the time. The rebuilding of St. Peter's at Rome was commenced by Julius II. after the design of Bramante; and Michael Angelo and Raphael were among the great artists who found in him a patron. He died Feb. 21, 1513.

JULIUS III., previously known as CARDINAL DEL MONTE, was chamberlain to Julius II., whose name he consequently assumed. Died in 1555.

JULLUNDER, a city of the Punjab, India; in the Doab or rich alluvial plain of the same name between the Sutlej and the Beas. Jullunder is a very ancient city, founded before Alexander's invasion of India, and is referred to in the "Mahábhárata." Pop. about 75,000.

JULY, the name of the 7th month of the year. It formed the 5th month of the old Roman year, and was called Quintilis by the Romans; but shortly after the calendar had been rearranged by Julius Cæsar, the name Julius was given to this month by Mark Antony, in honor of Cæsar, whose birthday fell in it. It contains 31 days.

JUMBOSEER (-sēr'), a town of Hindustan, province of Gujerat, presidency of Bombay, on a river of same name, 35 miles N. W. of Baroda. It carries on a considerable trade with Bombay, to which it sends cotton, grain, oil, and cloth. Pop. about 12,000.

JUMET (zhü-mā'), a town of Belgium, province of Hainault, three miles N. of Charleroi; has glass-works, distilleries, and extensive coal mines; pop. about 30,000.

JUMNA (jum'-), a river of Hindustan, which rises in the Himalayas, in the native state of Garhwal, near Jamnotri, at the height of 10,849 feet. It flows in its upper course in a generally S. W. direction, then bends to the S. E., and passing the cities of Delhi and Agra falls into the Ganges at Allahabad, after a course of 860 miles. Some trade is carried on by means of clumsy barks. Two important irrigation works—the Jumna Eastern and the Jumna Western Canals, derive their supply of water from this river.

JUMPERS, a class of religious fanatics, so named from their practice of jumping during the time allotted for divine service. They arose in Wales in 1760.

JUMPING DEER, *Cervus lewisii*, a kind of deer found W. of the Mississippi; called also the black-tailed deer.

JUMPING HARE, a species of jerboa found in Southern Africa, and so named from its general resemblance to a hare, while its jumping mode of progression, necessitated by the elongated nature of the hind legs, has procured for it its specific and popular distinction.

JUMPING MOUSE, found in Labrador and North America generally, but especially an inhabitant of the fur territories. Like the jumping hare, it is classified by some with the jerboas, and is one of the smallest of these forms.

JUNAGARH (jö-na-gar′), capital of a native state (area 3,283 square miles; pop., about 500,000) of India, in the Bombay presidency; on the peninsula of Kathiawar, N. W. of Bombay. One of the most picturesque towns in India. Pop., about 36,000.

JUNCEÆ, or **JUNCACEÆ**, the rush order, a small natural order of endogenous plants, so named from the typical genus *Juncus*. It is principally composed of obscure herbaceous plants with brown or green glumaceous hexandrous flowers, the perianth being in two series, as in *Liliaceæ*, but calycine instead of petaloid. Some of them, as the common rush, are employed for making mats, chair bottoms, and brooms.

JUNE, the 6th month of the year in our calendar, but the 4th among the Romans. It consisted originally of 26 days, to which four were added by Romulus, one taken away by Numa, and the month again lengthened to 30 by Julius Cæsar, since whose time no variation has taken place. During this month the sun leaves the sign of Leo and enters that of Cancer.

JUNEAU, a port and territorial capital of Alaska; on a promontory between Linn Channel and the Taku river, opposite Douglas Island, and about 55 miles N. E. of Sitka. It had a population of about 1,400 in 1896, which was largely increased in 1897 by the thousands of gold seekers bound for the Yukon river gold fields. Pop. (1910) 1,644. See ALASKA: KLONDIKE.

JUNE BERRY, a North American wild tree (*Amelanchier canadensis*) common in Canada and the United States, and allied to the medlar. The fruit is pear-shaped, about the size of a large pea, purplish in color, and a good article of food. Service-berry and shadbush are other names.

JUNGARIA, DZUNGARIA, or SUNGARIA, a country of Central Asia, forming part of the Chinese empire; bounded N. and W. by Russia, E. by the Chinese province of Kansu, S. by East Turkestan; area 147,950 square miles. It is an elevated and almost desert plateau between the Altai and Thian-Shan Mountains, and is intersected by subordinate ranges. Between the mountains are several fertile valleys, watered by numerous lakes, and cultivated by nomadic tribes. Millet and barley are the chief agricultural products; gold, silver, and iron are found in considerable quantities, and salt abounds in the lakes and mines. The country was originally inhabited by the Oo-Sun, distinguished from neighboring nations by their blue eyes and red beards. They were expelled by the Turks in the 6th century, and became subject to the Mongols. In 1754 the country was conquered by China, and has since been administered as a province of that empire, though a portion is claimed also by Russia.

JUNGERMANNIA (-man′-), a Linnæan genus of cryptogamous plants, containing a great number of species, which some modern botanists have divided into many genera, and some have even formed into an order, *Jungermanniceæ*, though it is more generally regarded as constituting a sub-order of *Hepaticæ*. The species much resemble mosses in appearance. Many are natives of Great Britain. The tropical species are very numerous.

JUNGFRAU (yöng′frou) ("The Maiden"), a magnificent peak of the Bernese Alps; height 13,671 feet. Its summit was first ascended by two Swiss gentlemen, named Meyer, in 1811. On Sept. 18, 1898, the first section of the Jungfrau railway, to the Eiger glacier, including a tunnel, was opened; since completed to the summit. The last stage is made by elevator.

JUNGLE, a term adopted into the English literature from Bengal (Sanskrit *Jangala*, "desert") and employed to designate those thickets of trees, shrubs, and reeds which abound in many parts of India, and particularly in the unhealthy tract called Terai or Tarayani, along the S. base of the Himalaya, and in the Sundarbans at the mouth of the Ganges. Tigers and other beasts of prey, elephants, boars, deer, and other quadrupeds may be found in great numbers in these thickets, with gigantic snakes and multitudes of monkeys. See BENGAL: INDIA.

JUNGLE CAT, *Felis chaus*, a wild cat, of a yellowish-gray, inclining to reddish above and white below the muzzle and the limbs, with dark stripes, and

the tail ringed with black; found in India and Africa.

JUNGLE FEVER, remittent fever, which is apt to attack Europeans and others who pass through East Indian jungles (forests) during the rainy season, called also, by Anglo-Indians, hill fever.

JUNGLE FOWL, the name given in India to the wild species of *Gallinæ* (*Gallus ferrugineus*) which is the parent of our domestic fowl, and to three other closely allied species. See POULTRY.

JUNIATA, a borough of Pennsylvania, in Blair co., on the Pennsylvania Company Railroad. Its industries include railroad repair shops and silk mills. Pop. (1910) 5,285; (1920) 7,660.

JUNIATA RIVER, a stream in Pennsylvania, formed near the center of the State, by the junction of the Little Juniata and Frankstown branch, flowing in a generally E. course and emptying into the Susquehanna 14 miles above Harrisburg. It is about 150 miles long, and though not navigable, is noted for its picturesque scenery. Beside it are the Pennsylvania canal and railroad, the latter crossing the stream many times.

JUNIN, a department of Peru, embracing about 23,347 square miles, divided nearly in the center by a range of the Andes mountains. While the province is rich in deposits of copper, coal, salt, and silver they are not yet developed. Agriculture is in the same backward state, small crops of cereals and sugar-cane being harvested. Most of the province is not traversed by railroads. The capital is Cerro de Pasco. Pop., about 400,000.

JUNIPERUS (-nip'-), a genus of plants, order *Pinaceæ*. The European species, *J. communis*, the common juniper, is a bushy shrub with evergreen sharp-pointed leaves. It grows in all the N. parts of Europe, in fertile or in barren soils, on hills or in valleys, on open sandy plains, or in moist and close woods. It abounds in the Alpine region of Switzerland. All parts of the plant, when bruised, exhale a more or less agreeable terebinthinate odor. The fruits and young tops are used in medicine, having stimulant and diuretic properties. The volatile oil (*oleum juniperi*), obtained from the fruits and other parts by distillation with water, is officinal in our pharmacopœias. The fruits or berries are used to flavor gin and Hollands. Turpentine is frequently substituted for them in the preparation of gin. Juniper wood has a reddish color, and is used occasionally for veneers. The species *J. Oxycedrus* yields, by dry distillation, the tarry oil known in France as *huile de cade;* it is principally used in veterinary medicine. The timber of this species is very durable. *J. Bermudiana* is the red or pencil cedar, and *J. Virginiana*, the Virginian red cedar. The wood of these species is used for pencils; that of the former is considered the best. *J. Sabina*, the common savin, is a native of the midland parts of Europe, and forms a small bushy shrub. The young branches, which are completely enveloped in the small imbricated leaves, are officinal in our pharmacopœias. They, and the oil obtained from them, have acrid, stimulant, diuretic, emmenagogue properties. Savin ointment is a useful acrid application to keep open blistered surfaces.

JUNIUS' (jō'-) LETTERS, letters published in the London "Public Advertiser" under the signature of "Junius," the first appearing Jan. 21, 1769, and the last, making the 69th, in January, 1772. The first authorized edition, printed under the author's inspection, was published in London, March 3, 1772, and was issued with an index in March, 1773. The letters of Junius were directed against the ministry and the public characters connected with it, and excited the greatest public interest. The purity of their language, the force and perspicuity of their argument, their studied and epigrammatic sarcasm, dazzling metaphors, and fierce personal attacks obtained for them a popularity which perhaps no other series of letters ever possessed, and arrested the attention of the government as well as the public. Every effort was made by the government to discover the author of these letters, but in vain. Since that time many volumes have been written on the subject. The strongest case appears to be in favor of Sir Philip Francis. The question is far from being a settled matter.

JUNK, a vessel employed by the Chinese, Japanese, and Malays in navigating their seas. It is the largest kind of Chinese vessel. It has no prominent stem or keel. The bow on deck is square, and the anchors are at each side of the bow. The stern is full, the rudder suspended, and at sea is lowered beneath the depth of the bottom of the vessel. The immense masts are in one piece; the lugsails are sometimes of matting.

JUNK-CEYLON, or **SALANGAN**, an island at the S. E. extremity of the Bay of Bengal, on the W. coast of the Malay peninsula, from which it is separated by a narrow channel; 25 miles long, about

10 broad. It is hilly and fertile, and well adapted for producing coffee and indigo, and has numerous herds of buffaloes, hogs, and deer. Extensive mines have been worked in recent years. Pop. about 5,000, consisting of a mixture of Malays, Chinese, Siamese, and Burmans.

JUNO

JUNKER, WILHELM (yöng'ker), a German traveler; born of German parents in Moscow, Russia, April 6, 1840. He studied medicine in Göttingen, Berlin, and Prague. Proceeding to Tunis and Egypt, in 1874, he in 1876–1878 made a series of explorations among the W. tributaries of the Upper Nile, going as far S. as the Kibbi, a feeder of the Welle. In 1879 he started from Cairo to explore the basin and course of the river Welle-Makua. This river was eventually (end of 1887) proved by Captain Van Gèle to be identical with the Ubangi, a right-hand affluent of the Kongo. Junker published "Travels in Africa" (1889), and died in St. Petersburg, Russia, Feb. 13, 1892.

JUNKERS (yöng'kurz), the name commonly given to the younger members of the nobility of Prussia and the adjoining states. "Junkerthum" was a term of reproach used in the 19th century to designate the party of reaction in Prussia, which found its most strenuous supporters among the nobility. The responsibility for starting the World War of 1914-1918 has generally been laid to the Junkers, associated with Pan-Germans and a military clique in sympathy with their aims.

JUNO, in Roman mythology, a celebrated deity, identified with the Hera of the Greeks, and generally regarded as the daughter of Saturn and Rhea, and sister and wife of Jupiter. The principal seats of her worship were Argos, Samos, Carthage, and afterward Rome. The hawk, goose, and particularly the peacock, often called *Junonia avis* (the bird of June), were sacred to her. She presided over marriage and childbirth, and as the goddess of all power and empire, and the patroness of riches, is represented sitting on a throne with a diadem on her head and a golden scepter in her right hand. The Roman consuls, when they entered on office, were always obliged to offer her a solemn sacrifice. The public finances were also under her care, and the mint at Rome was in her temple. In astronomy, the name of an asteroid in proximity to Ceres.

JUNOT, ANDOCHE (zhü-nō'), Duc d'Abrantès, one of Napoleon's generals; born in Bussy-le-Grand, Côte-d'Or,

ANDOCHE JUNOT

France, Oct. 23, 1771. He entered the army as a volunteer in 1792. His courage at Toulon caught the eye of Napoleon, and he carried him with him to Egypt as adjutant. At Nazareth he covered himself with glory by putting to flight 10,000 Turks with but 300 horse.

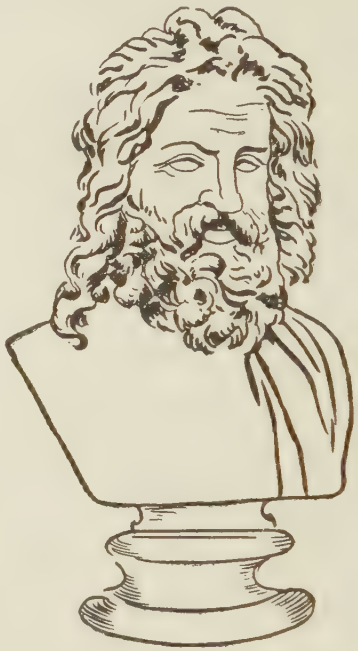
In 1804 he was made governor of Paris, and, after a short stay as ambassador in Lisbon, was given in 1807 the command of the army for the invasion of Portugal, where he soon won all the strong points. For his brilliant success he was created Duc d'Abrantès, and appointed governor of Portugal. He was so severely defeated by Wellington at Vimiera that he was obliged to conclude a convention at Cintra and retire from Portugal. He subsequently served in Germany and Russia, and was made one of the scapegoats for the Great Russian disaster, and sent to govern Illyria. He died near Dijon, July 29, 1813. His wife, LAURETTE DE SAINT-MARTIN-PERMON (1784-1838), the accomplished and recklessly extravagant Duchesse d'Abrantès, gained a reputation in the literary world by her "Memoirs" (1831–1835).

JUNTA (Spanish=an assembly), in Spain, a high council of state; it was originally applied to an irregularly summoned assembly of the states, as distinguished from the Cortes or Parliament regularly called together by the authority of the king. In Cuba the term was adopted by the insurgents to designate the general legation of the Cuban republic abroad. This legation or junta was first appointed Sept. 19, 1895, by the Constituent Assembly that formed the insurgent Cuban government, which at the same time made T. Estrada Palma head of the junta and chief Cuban representative abroad.

JUNTO, THE, an English Whig ministry in the reign of William III., the chief members of which were Admiral Russell, Somers, Lord Wharton, and Montague, the great financier. This was the first ministry ever made of one and the same party politics. It was the suggestion of Robert, Earl of Sunderland, to William III. Also a club formed by Benjamin Franklin for mutual improvement. Morals, politics, and natural philosophy, as well as the social well-being of man, were the main subjects discussed. It continued for about 30 years.

JUPATI (jö-pä-tē') **PALM**, *Raphia tædigera*, a fine Brazilian palm. The leaf-stalks, which are 12 to 15 feet long, are used for building houses and making baskets.

JUPITER, in Roman mythology, the supreme Roman deity, identified with the Greek Zeus. He was the son of Saturn and Rhea. Jupiter was the king and father of men, but his power extended over the deities also; and everything was subservient to his will except the Fates. From him mankind received their blessings and miseries; they looked on him as acquainted with everything past, present, and future. The oak was sacred to him, because he first taught mankind to live on acorns. His most famous temple was at Elis, in Olympia, where, every 4th year, the Olympic games were celebrated in his honor; and his most famous oracle was at Dodona, in Epirus. The Romans considered Jupiter as the especial patron of their city. He is generally represented as sitting on a golden or ivory



JUPITER

throne, holding in one hand thunderbolts ready to be hurled, and in the other a scepter of cypress, while the eagle stands with expanded wings at his feet. White, the color of the day, was sacred to him. For Jupiter Ammon, see AMMON.

In astronomy, the largest planet of the solar system. Its diameter at the equator is nearly 90,000 miles, and the distance from pole to pole is over 84,000 miles. Its bulk is 1,300 times that of the earth, but its density is only one-fourth that of the earth. The average distance of Jupiter from the sun is 483,000,000 miles; and a railway train traveling 50 miles an hour, would require nine centuries to go from the sun to Jupiter. The latter body revolves on its axis in about 9 hours and 55 minutes, which is the length of its day and night. Though traveling in its orbit round the

sun at the rate of 28,743 miles an hour, it takes nearly 12 years to complete its revolution; this, therefore, is the length of its year. It is surrounded by four conspicuous belts of a brownish-gray color, two N., two S. of the equator, with feebler ones toward the poles. The equatorial region of the planet is brighter than the rest. Jupiter has nine satellites, four of which were discovered Jan. 6, 1610, by Galileo, and another Sept. 9, 1892, by Prof. Edward E. Barnard, then of the Lick Observatory. The four discovered by Galileo are usually known by their numbers, which proceed in order of distance from the planet. If named they are called Io, Europa, Ganymede and Callisto. The 9th satellite was discovered by Nicholson in 1914.

JURA (zhü-rä'), a department in the E. of France, bordering on Switzerland; area 1,951 square miles; pop., about 250,000. A large part is covered by the JURA (*q. v.*) Mountains, and it is drained by the Ain and the Oignon. The pastures are both extensive and rich, and the cattle reared on them, together with their dairy produce (including Gruyère cheese), form the chief source of wealth. Iron is worked, marble and alabaster abound, and there are salt springs in different quarters, from which salt is made. Capital, Lons-le-Saulnier.

JURA (jö'rä), a range of mountains of a peculiar limestone formation, oölitic in composition, and generally called Jurassic, which extends from the angle formed by the Rhone and the Ain, in a N. E. direction (with a gradually declining elevation) for more than 450 miles, to the upper course of the Main. But it is usual to restrict the name to the ranges that lie along the frontier of Switzerland and France—mainly in the departments of Doubs, Jura, and Ain. The ranges are broken by numerous transverse gorges or "cluses." Limestone caves are numerous, and they abound in magnificent stalactites and in the bones of extinct animals. Some rivers of considerable size sink into the ground and reappear after some distance, as the Orbe, the Doubs, and the Creuse.

JURASSIC SYSTEM, the name given by geologists to what is termed in England the Oölitic system of strata, being very characteristic of the Jura Mountains; and also used in a wider sense to include both the Oölite and Lias.

JURISDICTION, in ordinary language and law: (1) The legal power, right, or authority of administering justice; the legal power which a court of equity has of deciding cases brought and tried before it; the legal right by which judges exercise their authority; judicial authority over a cause. (2) The power or right of governing or legislating; the power or right of exercising authority, or of making and enforcing laws. (3) The extent to which such authority extends; the district within which such power may be exercised. Appellate jurisdiction, jurisdiction in cases of appeal from inferior courts. Original jurisdiction, the legal right of hearing and determining a case in the first instance.

In Roman Catholic theology, ecclesiastical jurisdiction is defined as the "power which is concerned with the worship of God and the salvation of souls, and is exercised *in foro externo* as well as *in foro interno*." By commission from the Supreme Pontiff, whose powers, theologians teach, are derived from Christ through Peter, are constituted legates, patriarchs, primates, and prelates; by law or canon, rectors of universities, superiors of convents, provosts, and vicars-general receive their jurisdiction; and a jurisdiction exercised without challenge for 40 years is valid by prescription. To absolve a penitent, jurisdiction is necessary. Secular priests obtain this from their bishops; but confessors belonging to the regular orders have jurisdiction from the Pope over all the faithful when they have obtained the approbation of the bishop. A penitent *in articulo mortis* may be validly absolved, even in reserved cases, by a simple priest, even if degraded, apostate, or irregular. In ordinary cases, absolution given by a priest without jurisdiction is void.

JURISPRUDENCE, the science of law; the knowledge of the laws, customs, and rights of men in a community, necessary for the due administration of justice. General jurisprudence, the science or philosophy of positive law. Particular jurisprudence, the knowledge of the law of any particular nation. Medical jurisprudence, see MEDICAL JURISPRUDENCE.

JURY, a number of men selected according to law, impaneled, and sworn to inquire into and to decide on facts, and to give their true verdict according to the evidence legally laid before them. In courts of justice there are three kinds of juries, grand juries, special juries, and petit or common jury. The grand jury consists of 12 to 23 men; petit and special juries of 12 men each, and the verdicts given must be unanimous. They are appointed both in civil and criminal cases. A special jury is re-

sorted to in cases of too great importance to be decided by a petit jury. In Scotland the number of the jury in criminal cases is 15, and the verdict is determined by the voice of the majority. The establishment of proper jury trials seems to have been under Henry II., late in the 12th century. It was well rooted in the time of King John, and is insisted on in Magna Charta, as the great bulwark of liberty.

Also a body of men selected to award prizes at public shows, exhibitions, etc. To hang a jury, to cause a disagreement of opinion and prevent the return of a verdict.

JURY MAST, a temporary mast erected in place of one that has been carried away, or for navigating a vessel to a place where the permanent equipment of masting and rigging is furnished; the temporary rig is termed jury rig.

JUSSERAND, JEAN ADRIEN ANTOINE JULES, a French diplomat and author. He was born in Lyon in 1855, and was educated at the Facultés of

JUSSERAND

Lyon and of Paris. He entered the French Foreign Office in 1876 and became Councillor of the Embassy at London in 1887, remaining at the British capital till 1890. In 1898 he became Minister at Copenhagen, and has been French Ambassador at Washington since 1902. His literary works include: "English Wayfaring Life in the Middle Ages"; "English Novel in the Time of Shakespeare"; "A French Ambassador at the Court of Charles II."; "Histoire littéraire du peuple anglais"; "Piers Plowman"; "English Essays From a French Pen"; "A Literary History of the English People"; "The Romance of a King's Life"; "Shakespeare in France"; "Les Sports et Jeux d'exercise dans l'ancienne France"; "Ronsard"; "With Americans of Past and Present Days."

JUST, ST., LOUIS ANTOINE DE (*sang* zhüst), a French author and revolutionist; born near Nevers, France, Aug. 25, 1767. When the revolution broke out he became one of its most fiery advocates. In 1791 he brought out his "Spirit of the Revolution and Constitution of France," and was chosen representative of the department of Aisne in the Convention. While in Paris, he was among those who sternly advocated, and voted for, the death of Louis XVI. St. Just was conspicuous in attacking the Girondins and was associated with Robespierre. His name is identified with the bloodiest days of The Terror. In 1794 he was chosen president of the Convention, and drafted the report which sent his political opponents, Danton, Herbert, and others, to the scaffold. After the dawn of a reaction in popular feeling, and rise of the moderates St. Just was seized, with his colleague ROBESPIERRE (*q. v.*) and guillotined, July 27, 1794.

JUSTICE, LORD CHIEF, the title given to the chief judge of the Queen's (or King's) Bench Division of the High Court of Justice; formerly given also to the chief judge of the Common Pleas. He of the Queen's (or King's) Bench was, and still is, Lord Chief-justice of England; and on him were conferred, in 1881, the powers of the Lord Chief-justice of Common Pleas, that division of the court being abolished. Puisne (*i. e.*, lesser or ordinary) judges in all divisions of the high court bear the title of justice.

JUSTICE OF THE PEACE, a public officer invested with judicial powers for the purpose of preventing breaches of the peace, and bringing to punishment those who have violated the law. These officers, under the Constitutions of the United States and some of the States, are appointed by the executive; in others they are elected by the people and commissioned by the executive. In some States they hold their office during good behavior; in others, for a limited period. At common law, justices of the peace have a double power in relation to the

arrest of wrong-doers; when a felony or breach of the peace has been committed in their presence, they may personally arrest the offender or command others to do so. The Constitution of the United States directs that "no warrants shall issue but upon probable cause supported by oath or affirmation" (Amend. IV.). After his arrest the person charged is brought before the justice of the peace, and after a hearing he is discharged, held to bail to answer to the complaint, or, for want of bail, committed to prison. In some, perhaps, all, of the United States, justices of the peace have jurisdiction in civil cases given to them by local regulations. In Pennsylvania their jurisdiction in cases of contracts, express or implied, extends to $100.

JUSTICES, LORDS, in Great Britain, persons formerly appointed by the sovereign to act for a time as his substitute in the supreme government, either of the whole kingdom or of a part of it. The lord-lieutenant of Ireland is a familiar example of a lord-justice. The title lords-justices of appeal is in England given to a certain number of judges belonging to the appeal division of the Supreme Court of Judicature.

JUSTICIARY COURT, the highest criminal court in Scotland. Its judges are seven of the judges of the Court of Session—viz., the lords president and justice-clerk, and five others appointed by patent. It sits usually in Edinburgh, but also holds circuit courts twice a year in a number of towns, four times at Perth, Dundee, and Aberdeen, and six times in Glasgow, the kingdom being divided for that purpose into three divisions or circuits. The jurisdiction embraces all crimes whatever; and it is an appellate court as regards inferior criminal tribunals. Its decisions are final, there being no appeal to the House of Lords.

JUSTIFIABLE HOMICIDE, in law, homicide in circumstances which render it a justifiable act. When, for instance, an executioner hangs a criminal legally condemned, or when no other way of preventing an atrocious crime, say murder, is available, the deed ceases to be murder and becomes justifiable homicide.

JUSTIFICATION, in bookbinding, attention to keeping the matter of pages in exact register or correspondence, to secure even margins. In law, the bringing forward in court of a sufficient reason why a defendant did what he is called on to answer; such a plea must set forward some special matter. In printing, the adjustment of distance between the letters in the words and the words in a line, so as to avoid any glaring disproportion and make them fill the measure. In theology, Protestant: a forensic act by which God declares the sinner righteous, and acquits him of all guilt on account of the meritorious life and atoning death of Jesus Christ the Redeemer, imputed to the sinner and received by faith alone. A broad distinction is drawn between justification and sanctification. (See the Eleventh Article, and the Homily, Of Justification, also Confession of Faith, ch. xi.) Roman Catholic: the infusion of righteousness into the sinner by the Spirit of God. On that view there is not essential distinction between justification and sanctification. In support of this view, and against the distinction drawn by Protestants between justification and sanctification, Roman theologians cite I Cor. vi: 11.

JUSTIN I. (FLAVIUS ANICIUS JUSTINUS), a Byzantine emperor; born in A. D. 450. He rose to the rank of general from being a private soldier, before which he was a swineherd. The soldiers of the Prætorian band forced him to accept the imperial dignity on the death of Anastasius, in 518. He recalled the bishops who had been banished by the Arians, and published several severe edicts against that sect. Hearing of the destruction of Antioch by an earthquake, he laid aside the imperial robes, clothed himself in sackcloth, and passed several days in fasting and prayer, to avoid divine judgment. He rebuilt that city, and other places which were destroyed by the same calamity. He died Aug. 1, 527.

JUSTIN II., a Byzantine emperor; nephew and successor (565) of Justinian I. He caused his cousin Justinus to be strangled. He made war against Chosroes, King of Persia, who was obliged to sue for peace. Justin II. married Sophia, niece of Theodora, wife of the Emperor Justinianus, a woman of high spirit, who, taking advantage of her husband's weakness, governed the empire in conjunction with Tiberius. He died Oct. 5, 578.

JUSTIN, ST., or JUSTIN MARTYR, a Christian apologist of the 2d century; born in Sichem, Samaria. Carefully trained in the schools of Greek philosophy, he was converted to the Christian faith when about 30 years of age. A persecution breaking out against the Christians, under Antoninus, Justin presented to that emperor an admirable

apology in their behalf, which had the desired effect. He afterward addressed another apology to Marcus Aurelius, in which he defended the Christians against the calumnies of Crescens, a Cynic philosopher. For this, and his neglect of pagan worship, he was condemned to be scourged, and then beheaded, which sentence was put in execution A. D. 165.

JUSTINIAN (-tin'i-an) I. (FLAVIUS ANICIUS JUSTINIANUS), a Byzantine emperor; born in Tauresium, Dardania, Illyricum, probably May 11, 483. He succeeded his uncle Justin I. in 527. He had married Theodora, a well-known actress and courtesan, who was created Augusta, and crowned the same day as her husband. About the same time, BELISARIUS (*q. v.*), was married to Antonina, a professional companion of Theodora; and to the intrigues and jealousies stirred up by these two women are to be attributed the stains on Justinian's personal character. The political events of his reign may be summed up in the wars of Belisarius and the eunuch Narses, who obtained splendid successes over the Persians in the East, and the Vandals and Goths in Italy, and in the terrible sedition which broke out in Constantinople in 532, and was extinguished in the blood of 30,000 persons. In the latter case, Justinian I. would have fled from his capital, but for the courage and talents of Theodora. The glory of his reign is the famous JUSTINIAN CODE (*q. v.*). Justinian I. was also a great builder and engineer, and works of public utility were kept constantly in progress in all parts of the empire. He was remarkable for temperance, great learning and diligent application to business; but his religious bigotry, and his weakness in the hands of Theodora, marred all his good qualities. He died Nov. 14, 565.

JUSTINIAN II., surnamed RHINOTMETUS, a Byzantine emperor. He succeeded his father, Constantine IV. in 685. He was deposed and banished for his cruelty, by his general, Leontius, 695; regained his throne 10 years afterward, and, exhibiting the same ferocious disposition, was assassinated, 711.

JUSTINIAN CODE, a famous digest of the Roman law, compiled from the Gregorian, Theodorian, and Hermogenian codes, at the command of the Emperor Justinian I., by 10 of the ablest lawyers of his reign, under the guidance of the jurisconsult Tribonian. Their labors consisted (1) of the "Statute Law," or Justinian Code, properly so called; (2) the "Pandects," a digest of the decisions and opinions of former magistrates and lawyers—these two compilations consisted of matter that lay scattered through more than 2,000 volumes, now reduced to 50; (3) the "Institutes," an abridgment in four books, containing the substance of all the laws in an elementary form; (4) the laws of modern date, including Justinian's own edicts, collected into one volume, and called the "New Code." These labors, which a Cæsar had not been able to accomplish, were completed by the year 541.

JUTE, a textile fabric obtained from *Corchorus capsularis*, a plant belonging to the natural order *Tiliaceæ* (lime or linden). The jute plant is a native of the warmer parts of India, where its cultivation is carried on, especially in Bengal, on an extensive scale. It is an annual plant, growing to height of 12 or 14 feet. The fiber forms the inner bark of the plant, and possesses in an eminent degree the tenacity common to the bark of the plants of this order. The fiber is fine, and has a shining surface; it is injured by exposure to water, and hence is not well adapted for cordage and canvas, but is in extensive use for making bags, and in the United States and Great Britain serves many useful purposes, being mixed with hemp for cordage, and with silk in the manufacture of cheap satins; its principal use is in the manufacture of coarse cloth for bagging, and in making the foundation of inferior carpets, mats, etc. In Bengal, jute has been cultivated, and its fibers woven into various fabrics from a remote period. The headquarters of this branch of industry are at Dundee.

JÜTERBOG (yü'ter-boG), or JÜTERBOGK (-bok), a town in the Prussian province of Brandenburg, 39 miles by rail S. S. W. of Berlin. Cloth, cigars, and wine are manufactured. Near Jüterbog is Dennewitz, where the Prussians under Bülow defeated the French under Ney and Oudinot, Sept. 6, 1813. Pop., about 8,000.

JUTIAPA (Hö-tē-ä'pä), a department of Guatemala, bounded on the N. by Jalapa and Chiquimula, on the S. by the Pacific Ocean; on the S. E. by Salvador, on the W. by Santa Rosa; area 1,563 square miles; principal industries cattle-raising and coffee and sugar planting. Capital, Jutiapa.

JUTLAND, a division of Denmark, formerly comprising the whole continental portion of the Danish dominion, but now restricted to the part of the peninsula belonging to Denmark to the N. of Schleswig, being about 170 miles in

length and from 60 to 80 in breadth; area, 9,904 square miles; pop. (1916) 1,253,809. Products, rye, oats, buckwheat, and dairy produce. Cattle, horses, and hogs are extensively reared and exported. Manufactures are unimportant. Capital, Aarhuus. Jutland is supposed to have been originally the country of the Cimbri. Later on its inhabitants, known as Jutes, shared in the Saxon invasion of England, and subsequently formed part of the Saxon alliance against Charlemagne, and, under the denomination of Norman (Northern), frequently ravaged the N. W. coasts of Germany and France, ultimately establishing a colony in the last named country.

JUTLAND BANK, NAVAL BATTLE OF, a naval engagement of the first magnitude, fought between the German and British fleets during the European War, on May 31, 1916.

For months previous to this date the British fleet had been making a practice of occasionally sweeping the North Sea with all its available ships, to discourage any attempt on the part of the German ships to raid the British coast. On May 31, 1916, one of these patrols in force was in progress, under the command of Admiral Jellicoe, who, himself, occupied a position near the middle of the North Sea, while Vice Admiral Beatty, commanding two battle cruiser divisions, supported by a division of dreadnoughts of the Queen Elizabeth class, under Rear-Admiral Evans-Thomas, was some seventy miles to the southward. The weather at the time was calm, but inclined to be foggy, rendering it impossible to see any great distance.

In the middle of the afternoon one of Beatty's ships, the light cruiser "Galatea," unexpectedly sighted smoke, being then about ninety miles west of the Danish coast. The "Galatea" steamed forward to investigate, and an hour later found herself engaged with a squadron of five German battle cruisers.

Beatty immediately attempted to intercept the German ships in their attempt to retire, whereupon the German Admiral, Vice Admiral von Hipper, turned and gave battle, at a range of about nine miles. Ten minutes after the first heavy firing began, the "Indefatigable," the rear ship of the British column, was struck by a number of heavy shells fired by the Germans and sunk. Twenty minutes later the "Queen Mary," the latest and best of the British battle cruisers, also sank under the German fire. For the time being the advantage in armament and number of ships was with the Germans, but presently Rear Admiral Thomas' dreadnought division came within range, and again the British had the superiority of strength on their side. For the next half hour von Hipper's five battle cruisers fought four British battle cruisers and four dreadnoughts, suffering severe punishment.

The British ships were making every effort to cut off the retreat of the German ships, and with every prospect of success, which would have compelled von Hipper to run to the northward, in the direction toward Jellicoe's fleet of dreadnoughts. But presently the British made out the head of a column of German dreadnoughts approaching, to the relief of von Hipper.

Immediately Beatty changed his tactics, for he was now hopelessly outnumbered. Instead of trying to drive the Germans toward the main British fleet, he turned and ran, hoping to draw the Germans after him in pursuit. The ruse worked well, and von Hipper immediately began the pursuit, unconscious of the near approach of the main British fleet. The German dreadnought column, under Admiral von Scheer, followed along behind.

Meanwhile Jellicoe, seventy miles to the northward, with three squadrons of the most powerful fighting ships in the world—twenty-five in all, including his flagship, the "Iron Duke," had received wireless communication of what was going on and was steaming toward the scene of battle at top speed. At about six in the evening the foremost ships of Jellicoe's column, three battle cruisers under Admiral Hood, sighted Beatty's fleeing fleet, and swung into the action. But hardly had the "Invincible," Hood's flagship, opened fire, when she disappeared amidst a great burst of shell and smoke.

The main fleet of the British, however, was by this time close at hand, coming to Beatty's rescue. As has already been stated, the weather was overcast and foggy, and this greatly handicapped the British Admiral, as he was therefore unable to distinguish friend from foe on his approach, and did not, therefore, dare to open fire until very close to the scene of action.

As Jellicoe approached, Beatty's column opened before him, and the main British fleet swept through, southward, heading for the head of the German line. Beatty's ships also swung southward, parallel with the main fleet, and presently the Germans found themselves in the focus of the fire of practically the whole British fleet. According to the

British reports, the German column "crumpled" under this unexpected attack.

The British had succeeded in establishing what is technically known as a "cap"; they enveloped the German column. But to the advantage of the Germans, night was coming on. Von Scheer, who, as von Hipper's superior, was in command of the German ships as a whole, turned from east to west, and sent his whole fleet of destroyers against the British. Fortunately Jellicoe detected the strategy, and himself sent forward his destroyers, and a battle of destroyers took place in the fog between the two main fleets. At the same time the German fleet drew off to the westward, the British fleet passed completely around the German flank and reached a position to the southward, at a point between the German fleet and its base at Helgoland.

By this time complete darkness had set in and firing had practically ceased, as neither side could distinguish friend from foe. During the night there were frequent encounters between the destroyers of the respective fleets. When daylight came, at about three o'clock, the fog had lifted, but the German ships were no longer in sight. Jellicoe reported that he conducted a thorough search, but the British ships dared not approach much nearer toward the German base, which was thickly strewn with mines. On the following day the British fleet was back in its home port, taking stock of its losses. These proved to be: three battle cruisers, three armored cruisers and eight destroyers. The Germans later reported that they had lost one battleship, one battle cruiser, four light cruisers, and five destroyers.

The total tonnage of British ships lost was 117,150. The Germans acknowledged a loss of 60,720. The loss of men by the British was 6,105. That of the Germans was 2,414.

Of the small number of capital ships lost, four were flagships. Two British rear admirals, Hood and Arbuthnot, went down with their ships. Two admirals, the German von Hipper and the British Burney, shifted their flags in the thickest of the fight; von Hipper from the "Luetzow" to the "Moltke," Burney from the "Marlborough" to the "Revenge."

One of the outstanding features of this battle is the little indication of new development in naval tactics or methods of fighting during the war, as compared to the many radical innovations which appeared in the land fighting. Neither submarines nor aircraft played any part in the engagement, though available to both sides.

In material damage and loss of lives the Germans obviously had the advantage in the battle, and this fact was made the basis for claims of a great victory by the Germans. But the fact remained that Great Britain still retained command of the sea, and the Germans had fled from the scene of action. Nevertheless, the British fleet had lost a little of its prestige on account of the superior gunnery shown by the Germans.

Considered in its largest aspect, however, the battle was undoubtedly a British victory. The German fleet had sailed on a mission whose object is still in doubt; the official despatches described it as "a mission to the north." The most northerly point reached was only 180 miles from the German base, and the whole fleet, or what was left of it, was back in port within thirty-six hours of the time of departure. Whatever it was, the German object had failed. Moreover, the German fleet never again ventured out to battle, remaining in port until the end of the war. Considering its influence in bringing the war to a favorable end for the Allies, the Battle of Jutland was unquestionably an Allied victory.

JUTURNA (-turn'-), the daughter of Daunus, changed by Jupiter into a fountain, whose waters had the power of restoring virginity.

JUVENAL (jū've-nal) **(DECIUS JUNIUS JUVENALIS)**, a Roman poet and satirist; born probably in Aquinum, Campania, about the beginning of the reign of Claudius. He studied rhetoric under the most celebrated masters, and is said to have become an eminent pleader. His first essay as a poetical satirist was directed against the player Paris, and for repeated attacks of the same kind he is said to have been sent into an honorable kind of exile, by being made commander of a cohort at Pentapolis, on the borders of Egypt, in his 80th year. Juvenal may be said to have been the last of the Roman poets, and as the bold and unflinching castigator of vice he stands without a rival. Sixteen of his satires are extant.

JUVENILE COURTS, law Courts established to deal separately and in a different way with criminals who are between the ages of 8 and 16. For the last fifty years it has been deemed essential by penologists that the State should assume a different attitude toward young offenders, and that its purpose should be

their reformation rather than their punishment. Massachusetts in 1869 established the office of "visiting agent," the incumbent of which should acquaint himself with the criminals of youthful age and to whom notice had to be sent before the child was sent to jail. The next movement to tend toward a Juvenile Court was the separation of the older criminals from the place of confinement of minors. Illinois, in 1899, passed an act which many regard as having established the first Juvenile Court. Under this act the Circuit Court was empowered to deal in an especial and different manner with younger delinquents, although the same processes of the criminal law such as those of the Grand Jury, District Attorney, etc., had to be followed. Perhaps the credit of establishing the first real Juvenile Court is due to Colorado, which State in 1899 passed an act permitting the county courts to act for the reformation of young criminals. Upon this Act was founded the Juvenile Court of Denver, which Judge Ben B. Lindsey has made so justly famous. Paid probation officers to look after offenders are a necessity to the successful working of the Juvenile Court but they came very late in the history of the movement. Comparatively few States have established separate Juvenile Courts, usually choosing some established court and designating this function to it. Colorado led the way here, when in 1907 it established a separate Juvenile Court, with a procedure all its own, in every city with a population over 100,000.

An important phase in the movement to protect the young in our great cities has been the passage of laws by many of the States known as Contributory Delinquent Laws, which provide that any parent, guardian, or other person who shall encourage or cause a child to commit a crime shall be deemed guilty of a misdemeanor and punished accordingly. In all acts dealing with the Juvenile Court Colorado, under the influence of Lindsey's great work, has been the leader. A vivid account of his experiences is given in his autobiography.

JUVENTAS (-ven'-), a Roman goddess, who presided over youth and vigor. She is the same as the Hebe of the Greeks, and was represented as a beautiful nymph in variegated garments.

JYAR (jī'-), the 8th month of the Jewish year, corresponding, at the earliest, with our April, but it may be as late as May; it has only 29 days.

K

K, k, the 11th letter and the 8th consonant of the English alphabet. This letter has before vowels, and before all consonants except n, the same phonetic value in all the alphabets where it appears—a guttural momentary sound produced by raising the back of the tongue to the back of the palate, as in kill, keen, king. Before n it is not sounded in English, as in knee, knell, knife. From the 16th to the 18th century it was used in English at the end of words after c, apparently to strengthen the hard c, as in alchemick, musick, publick, but this usage is now confined to monosyllables, as check, clock, duck, sick.

Forming part of the original Phœnician alphabet, k passed into Greek and the oldest Latin; but c was substituted for it in the latter at an early date, and it only survived in a few common abbreviations (see below). In the early part of the present era, moreover, the sound of k or c (hard) was lost in Italy. It underwent palatization—*i. e.*, it was produced by raising the middle instead of the back of the tongue to the palate, and c was sounded as ch (tsh). Those modern alphabets, therefore, derived from Italy (*i. e.*, Celtic, Modern Italian, French, and Spanish) have, properly speaking, no k, and the sound and letter are only present in a few foreign importations. In those alphabets, however, derived through the Greek (*i. e.*, Teutonic and Slavonic) k plays an important part. But in English the letter holds a very ambiguous position. The earliest Anglo-Saxon alphabet, being derived from Roman missionaries, was without k, and c was generally used to represent its sound, but German influence soon introduced it to northern England, and made it interchangeable with c throughout the country, and the two letters were used indifferently (*cyning, kyning*). The Norman French of the Conquest brought in many words in which k could have no place, and not only often softened the old c (hard) to ch, or c (sibilant *cild, child*), but gave c general predominance over k, even when the original sound was retained. In northern England, however, it continued to be freely used in words in which in S. dialects k had given way to ch or c (sibilant)—N. *rike* (kingdom), S. *riche;* N. *croke* (cross), S. *crouche;* N. Alnwick, S. Greenwich; N. *Caister*, S. *Chester*. In Lowland Scotch, likewise, k still retained, as it does to this day, its old importance (kirk and church). K has undergone many other phonetic changes in Indo-European languages. In the Græco-Latin branch it was sometimes labialized, and became p, Latin *equus* and Greek *hippos*=horse, Sanskrit *kankan*, and Greek *pente, i. e., penpe* = five. In English it has been occasionally replaced by t, Old English *bak*, Modern English bat, make=mate, maked=made.

As an initial K is used, in orders of knighthood for knight; as K. G., Knight of the Garter; K. T., Knight of the Thistle; K. C. B., Knight Commander of the Bath.

As a symbol K is used:

1. For numerals (Roman) = 250, or with a line above it = 250,000; in Greek, K with a perpendicular stroke below it = 20; but when the stroke is written above it, the sum is increased a thousand fold, and it then equals 20,000.

2. In chemistry, for potassium (being the initial letter of kalium) by which name the metal is also known.

KAABA, or **CAABA** (kä′bä or kā′abä), the name of an oblong stone building within the great Mosque of Mecca. According to the legend Adam first worshiped on this spot, after his expulsion from Paradise, in a tent sent down from heaven for this purpose. Seth substituted for the tent a structure of clay and stone, which was, however, destroyed by the Deluge, but afterward rebuilt by Abraham and Ishmael. It is, as it now

stands—rebuilt in 1627—35 to 40 feet high, 18 paces long, 14 wide. Its door, coated with silver, is opened only three times in the year—once for men, once for women, and once for the purpose of cleaning the interior.

KAAP GOLDFIELDS, a district in the Transvaal, intersected by the Kaap river, a tributary of the Crocodile, containing the mining town of Barberton and other settlements.

KAARTA (kär'tä), a French territory of West Africa, of considerable extent, W. of Bambarra, and N. of Senegambia; pop. est. 300,000. It is mountainous, but well cultivated. Capital, Nioro.

KABA, or **KABAH** (kä'bä), name of the ruins of a large city of Yucatan, visited by Charnay, Stephens, etc.; 12 miles S. W. of Ticul. The ruins consist of huge pyramids, great terraces crowned with buildings, palaces, triumphal arches, etc.

KABAIL, or **KABYLE** (ka-bīl'), a person belonging to any of a series of tribes inhabiting Algeria, and forming the best known branch of the Berber race, the old aborigines of north Africa, who occupied at one time all the territory between Egypt and the Canary Islands. They were known to the Romans as the Numidians. Though in physique the Kabyles resemble the Arabs, their life and character are radically different. Their houses are of stone; they dwell in towns, and engage not only in the cultivation of figs, vines, and tobacco, but in the manufacture of lime, tiles, soap, and domestic utensils. The fine arts are not unknown to them, and wood-engraving and engraving on metal are practiced among them. Though Mohammedans by religion, their political institutions are essentially democratic. The Arab language is spoken by the majority of them, but their original tongue is not lost, and their popular literature, preserved through oral transmissions, has been committed to writing by a French savant. The French, in whose territory they now lie, find them active soldiers and artisans.

KABARO (-bä'rō), a small drum used by the Egyptians and Abyssinians.

KABUL (kä-böl'), capital of the kingdom of Afghanistan; on the Kabul river, at an elevation of 6,400 feet above sea-level. The citadel, Bala-Hissar, contains the palace and other public buildings, the fort, etc. Kabul carries on a considerable trade with Hindustan through the Khyber Pass. It was taken by the British in 1839 and in 1842, and on the occasion of a subsequent war with the British in 1879 Kabul was twice taken by their troops. Pop., about 150,000.

KABUL RIVER, a stream rising in Afghanistan at the height of about 8,400 feet, flowing E., passing through the Khyber Pass into India, and falling into the Indus at Attock. Length, 300 miles.

KADESH, **KADESH-BARNEA**, or **EN-MISHPAT**, the name of a fountain, city, and the desert around, in the S. border of the Promised Land. It is said, in Num. xx: 65, to lie in the "uttermost border of Edom," and was probably situated beyond the great valley El-Arabah, S. of the Dead Sea. Kadesh was twice visited by the Israelites in their wanderings.

KADIAK (käd-yak'), an island off the S. coast of Alaska, separated from the mainland by Alaska Strait; area, 3,465 square miles. Pop., about 2,500. Chief town, Karluk; pop. 500. Cattle raising and agricultural products are now directed by the U. S. Department of Agriculture. It is mountainous and heavily wooded, with good harbors.

KADSURA, the Japanese name of a genus of *Schizandraceæ*. They are mucilaginous shrubs, with three sepals, six to nine petals, and 15 or more stamens, found in tropical Asia. By boiling the juice, a mucilage is obtained, which is used in making Broussonetia paper. Japanese women use it also to clean pomatum from their hair.

KAF, the mountain which in Mohammedan legend surrounds the world.

KAFFA, or **FEODOSIA**, a seaport in the Russian province of Taurida; on a bay on the E. side of the Crimea. Contains the ruined palace of the Khans of the Crimea and a Greek cathedral. Soap and caviare, camel-hair carpets, and sheepskin rugs are manufactured; and here is the only oyster fishery in Russia. The ancient Theodosia or Feodosia was a flourishing colony of the Milesians; in the 13th century the Genoese founded here a successful trade depot, which they called Kaffa. It fell to the Turks in 1475, and to the Russians in 1792.

KAFFIR, **KAFIR**, or **CAFFRE** (kaf'er), an inhabitant of Kaffraria in South Africa. The Kaffirs embrace two main divisions, the ZULUS (*q. v.*) and the Kaffirs proper. Their color is neither black, like that of the negro, nor of the color of a faded leaf, like that of the Hottentot, but a deep brown. Hair short, curling, and woolly; but it is not of the wooliness of the negro. Nose tolerably elevated; lips large and thick.

The body is muscular and athletic, and the stature is equal to that of the European race. In the useful arts they have made considerable progress. Besides domesticating the ox and sheep, they have also tamed the horse and goat, and their agriculture extends to the cultivation of rye and millet. It is a singular and distinctive trait that they practice universally the rite of circumcision. They are believed to have received the name of Kaffir from the Mohammedans, on account of their refusal to adopt the religion of Islam.

In 1834 the first of the greater Kaffir wars broke out, and lasted till the following year. But, though the enemy were repulsed, and their territories up to the Kei river annexed by the colonial government, the annexation was not ratified by the home government till the termination of the next war (1846–1848). The conquered districts were called British Kaffraria, and from 1853 to 1865 formed a separate crown colony; in 1865 British Kaffraria was incorporated in Cape Colony. In 1850 the turbulent Gaikas, who had waged most of the former wars, in conjunction with the rest of the Ama-Xosa and the Ama-Tembu tribes, and a large body of revolted Hottentots, once more invaded the colony, but after a struggle of nearly three years were successfully driven back. The last war broke out in 1877; the Gcalekas took up arms, and were joined by the Gaikas, and eventually the Zulus also entered the fray. The war ended in the overthrow of the power of the Kaffir chiefs, and the gradual incorporation of their territory in the Cape Colony. By 1888 all Kaffraria up to the frontiers of Natal, with the single exception of East Pondoland—which, however, was a British protectorate—had been included within the bounds of the Cape Colony.

The Ama-Fengus, or Fingoes, are the remnants of broken Kaffir tribes; they are despised by the organized Kaffir races, and but for the protection of the British would probably be little better than slaves to them. They have always been loyal to their protectors, and live scattered from Zululand to Cape Colony.

KAFFIR CORN (*Sorghum vulgare*), a variety of millet cultivated in some parts of Africa, and recently introduced into the United States.

KAFFIR OX, the Cape buffalo. See BUFFALO.

KAFIRISTAN, KAFFIRISTAN, or **CAFFRISTAN**, a country of Central Asia, on the S. declivity of the Hindu Kush Mountains, forming part of the N. basin of Kabul; area, about 215,400 square miles; pop. est. 200,000 to 300,000. It forms a part of Afghanistan since 1895, though the tribes are generally independent. The inhabitants differ from the neighboring tribes in their origin, language, creed, and complexion. The soil is sufficiently fertile to render outside intercourse almost unnecessary. The inhabitants are very skillful workers in wood and metals.

KAGOSHIMA (kä-gō-shē'mä), a town of Japan, on a large bay of the same name, at the S. end of Kiu-siu Island, with manufactures of pottery and porcelain, arms, and cotton; pop., about 75,000. It was bombarded by the British fleet in 1863. In 1914 a volcano on an island nearby erupted and 100,000 persons became homeless.

KAHN, JULIUS, member of Congress from California; born in Kuppenheim, Baden, in 1861. At the age of five he came to the United States with his parents and was educated in the public schools of San Francisco. He was for a time on the stage, playing with many well-known actors. He returned to San Francisco in 1890 and began the study of law. He was elected to the State Legislature in 1892. In 1899 he was elected to Congress and was successively re-elected. In the discussions in Congress preparatory to the entrance of the United States into the war, he took an active lead as a member of the Foreign Relations Committee in the House, and largely through his efforts President Wilson was enabled to pass the necessary legislation through Congress. His special efforts were employed in securing the passing of the Selective Draft Act in the extra session of the 65th Congress.

KAHN, OTTO HERMANN, an American banker; born at Mannheim, Germany, in 1867. His father was a naturalized American citizen. He was educated in Germany, and studied banking in this country. After serving in London banking houses, he became a member of the firm of Kuhn, Loeb & Co., in New York, in 1897. He was a director of many important financial institutions. During the war he did important work as financial advisor to the Government, and he was awarded medals by the governments of France, Spain, and Italy.

KAI-FUNG, capital of the Chinese province of Honan, near the S. bank of the Hoangho, where the great inundation occurred in 1887, long the chief settle-

ment of the Jews in China. Pop., about 200,000.

KAIL, or **KALE**, the name given in England and Scotland to a variety of the *Brassica oleracea*, differing from the cabbage in the open heads of its leaves, which are used as "greens" and as food for cattle. There are many varieties, the leaves being sometimes green, sometimes reddish-brown, sometimes purplish in color, and plain, waved, curled, or laciniated in form. Usually a biennial plant; it is sometimes perennial, as in the variety known as Milan kale (*chou de Milan*). It is variously known as borecole, winter greens, German greens, and Scotch kale.

KAILAS (kī-läs'), a sacred mountain of the Hindus in the Himalayas, near the sources of the Indus and Sutlej; height, 20,226 feet.

KAINITE, a hydrous sulphate of potash and magnesia, found along with beds of rock-salt, especially in Germany and Austria. It is valuable for the production of double sulphate of potash and magnesia, and is used as a manure.

KAI-PING, the coal region in Chih-li, China; 75 miles N. E. of Tien-tsin, near the Lan-ho river, with railway connection with Hokow and with Tien-tsin *via* Taku.

KAIRWAN (kīr-wän'), a walled town of Tunis. It contains about 50 ecclesiastical structures, of which the mosque of Okba, who founded Kairwan about 670, is one of the most sacred of Islam. Outside the city, to the N. W., is the mosque of the Companion—*i. e.*, of the Prophet; this and other sacred tombs have rendered Kairwan—*i. e.*, caravan or resting-place—the Mecca or sacred city of northern Africa. As such, it has been jealously guarded from defilement by the presence of Jews and for the most part of Christian travelers; but it was entered and explored by the French in 1881. Kairwan makes copper vessels, potash, carpets, and articles in leather. Pop. about 25,000.

KAISARIAH (kī-zär-ē'ä) (ancient Mazaca), a town of Asiatic Turkey, province Karamania, on the Karasa, a tributary of the Euphrates. It is a considerable place and the emporium of an extensive trade. Cotton is grown in great quantities in the vicinity. Manufactures, cotton fabrics and morocco leather. Pop. about 25,000.

KAISAR-I-HIND (kī"zär-ē-hind'), Hindustani for Empress of India, the title conferred on Queen Victoria in 1876 by act of Parliament, and proclamation at Delhi.

KAISER (kī'zer), an emperor; the title of the former Emperor of Germany. He was called Kaiser because by Diocletian's arrangement certain provinces near the Danube, which came into possession of the German empire in 1438, were anciently assigned to a Cæsar. This ancient title of the German emperor was revived, when, in 1871, King William III. of Prussia at the successful conclusion of the Franco-Prussian War, was proclaimed Emperor of Germany. The last Kaiser Wilhelm II. was forced to abdicate in November, 1918, when the German Republic was proclaimed and is now (1920) an exile in Holland.

KAISERSLAUTERN (kī'zers-lou-tern), or **LAUTERN**, a town of the Bavarian Palatinate. An important manufacturing place; the chief manufactures being tissues, yarn, sewing and other machines, ultramarine, furniture, beer, bricks, etc., and there are iron-works, steam sawmills, and railway shops. Frederick I. built a castle here in 1152 (destroyed by the French in 1713); and near by the French republican armies were defeated in 1793 and 1794. Pop. about 55,000.

KAISERSWERTH (kī'zers-vert), a Prussian town on the Rhine, 10 miles below Düsseldorf, the seat of the deaconesses' house, founded by Pastor Fliedner; pop. about 3,000.

KAISER WILHELM CANAL. See KIEL CANAL.

KAISER WILHELM'S LAND, the N. section of southeastern New Guinea; declared a German protectorate in 1884; area, estimated 70,000 square miles; pop. about 100,000. The administration was transferred from the New Guinea Company to the imperial government, April 1, 1899. Gold has been found in the Bismarck Mountains. Captured by Australian troops Sept. 25, 1914.

KAITHAL (kī-thul'), an ancient town in the Punjab, India, 93 miles N. N. W. from Delhi. It is connected traditionally with the monkey-god Hanuman, and is called in Sanskrit Kapisthala, the "abode of monkeys." It has saltpeter refineries, and manufactures lac ornaments and toys. It became British in 1843.

KAKABIKKA, a remarkable cataract of British North America, in the Kaministiquia river, just before it enters Lake Superior. It has a fall of 130 feet over a mica slate rock.

KAKEMONOS (-kē'-) Japanese name for paintings on paper or silk, having a rod at bottom like a map, and hung similarly on a wall.

KAKODYL, or CACODYL, in chemistry, an organo-metallic base, containing arsenic. It is prepared from its chloride by the action of zinc. It is a thin, transparent, colorless liquid, resembling arsenietted hydrogen in smell. It is very inflammable, and when poured into oxygen, chlorine, or the air, it inflames.

KALA (kä'lä), in Hindu mythology, Siva in one of his manifestations; sometimes used for Time. (See KALEE.) Also one of the names of Yama, regent of the dead; hence, sometimes death itself.

KALA AZAR, a malady the symptoms of which include fever and sores, existing in an epidemic form in Asia and north Africa, and showing a high death-rate. In one of its forms it is known as "Oriental Sore." The parasite has only been discovered in recent years, Leishman describing it in 1903.

KALAFAT, a town in Rumania, on the left bank of the Danube, about 1 mile E. of Widdin, on the opposite bank. During the Russo-Turkish War of 1853–1854 it was twice unsuccessfully attacked by the Russians. Since Rumania became an independent kingdom it has made rapid progress.

KALAHARI, or KALIHARI, a desert region in central South Africa, N. of the Orange river; a large tract of which is included in the British protectorate of Bechuanaland. An abundant supply of watermelons and some remarkable varieties of tubers, together with large herds of antelopes and other game, provide ample subsistence to the bushmen and Bakalahari inhabiting this barren region.

KALAMATA (kä-lä-mä'tä), a seaport in the Peloponnesus of Greece, on the Gulf of Koron; the seat of an archbishop. Its exports are chiefly currants, figs, olive-oil, and soap.

KALAMAZOO, a city and county-seat of Kalamazoo co., Mich., on the Kalamazoo river and the Michigan Central, the Lake Shore and Michigan Southern, and several other railroads; 47 miles S. of Grand Rapids. It is the trade and jobbing center for a large agricultural region, is the most important celery market in the world, has over 250 mercantile houses, and has manufactories representing about 70 distinct industries. The city is the seat of Kalamazoo College (Bapt.), Michigan Female Seminary, and Nazareth Academy (R. C.), the State Insane Asylum, Borgess and Queen City Hospitals, Children's Home, Home for Erring Girls, Home for Feeble-Minded Children, and an Industrial School Home. It has several National and State banks, excellent water power for its factories, and an assessed property valuation of about $10,000,000. Pop. (1910) 39,437; (1920) 48,487.

KALAMAZOO COLLEGE, a coeducational institution in Kalamazoo, Mich., founded in 1855 under the auspices of the Baptist Church; reported at the close of 1919: Professors and instructors, 16; students, 288; president, H. L. Stetson, LL. D.

KALANCHOE, a genus of *Crassulaceæ*. The leaves of *K. laciniata* are valued as an application to wounds and sores; they allay irritation and promote cicatrization. *K. spathulata* is poisonous to goats. In Kangra, in India, the leaves are burnt and applied to abscesses. *K. brasiliensis* is used in Brazil as a refrigerant. *K. pinnata* is the same as *Bryophyllum calycinum*.

KALAPOOIAN, a division of the North American Indians, embracing numerous tribes who formerly occupied the valleys of the Willamette river in Oregon, above the falls. Owing to the ravages of disease and the incursions of the hostile Klikitats, their numbers have been greatly reduced and the remnants, less than 200, are now located on Grande Ronde reservation, Ore.

KALEDA, in Slavonic mythology, the god of peace, somewhat similar to the Latin Janus. His feast was celebrated Dec. 24.

KALEE, or KALI (kâ'lē), in Hindu mythology, the sacti or consort of Siva in the form of KALA (*q. v.*). She is represented with four arms, one holding a sword, the second a trident, the third a club, and the fourth a shield. A dead body hangs from each of her ears; human skulls strung together form her necklace; and the hands of slaughtered giants interlaced with each other compose her girdle. Her eyebrows are matted and stained with the gore of monsters which she has just torn to pieces and devoured. She is exceedingly pleased when her altars are inundated with human blood. The Thugs selected her as their tutelary deity.

KALEIDOSCOPE, an instrument which, by means of reflection, enables us to behold an endless variety of beautiful forms of perfect symmetry. It consists of a tube with an eyehole. At the oppo-

site end chips of colored paper or glass are loosely held in compartments in which by reflection every time that the tube is revolved, and the relative position of the objects in the box altered, a different pattern is observable. The instrument, which was perfected by Sir David Brewster in 1817 (though first invented, under the name of the polyplatin, by Baptista Porta, in the 16th century) is occasionally used by designers of patterns for carpets, wall-papers, or calico and other dress materials. It is also useful as a scientific apparatus for illustrating the optical problem of the multiplication of images produced by reflection, when the object is placed between two plane mirrors inclined at different angles. It has likewise been a favorite toy from the year of its invention. Some varieties of the instrument are as follows:

(1) Polyangular kaleidoscope: Here the reflecting mirrors are so arranged that their angle of inclination can be altered by screws attached to the outside of the tube at pleasure, and it is in this form that the instrument best illustrates the theory of reflection, and therefore is largely used for scientific instruction.

(2) Polycentral kaleidoscope: Here more than two mirrors are employed; but not ordinarily more than four. They may be of trapezoidal shape, and form a hollow pyramid, or rectangular, forming a hollow cube. By this means the images produced by reflection of the objects in the box are greatly multiplied and more complicated patterns formed. Dr. Roget was the inventor of this instrument.

(3) Telescopic kaleidoscope: Here the object box is removed and its place taken by a tube capable of being lengthened or shortened by an external screw, and fitted at its end with a double convex lens. The instrument can thus reflect any objects (trees, flowers, etc.) which are brought into its focus. It was invented by Sir David Brewster.

KALEVIPOEG (kä-lā′vē-pög) ("The Son of Kalev"), the national poem of the Esthonians, consisting of 20 cantos of popular songs collected into a continuous epic by Kreutzwald (1857–1859).

KALGAN (käl-gän′), a Chinese town, 110 miles N. W. of Peking, built opposite the passage through the Great Wall; one of the chief emporiums of the Chinese tea trade with Mongolia and Siberia, about 21,500,000 pounds being exported from here annually. Textiles and smoked provisions are imported from Siberia and Russia. Pop. about 80,000.

KALI (kā′li), in botany, the saltwort, *Salsola kali*. Also a name given by the Arabs to a plant, *Salsola kali*, which grew near the seashore, and from whose ashes they extracted a substance which they called alkali, for making soap. The term kali is used by German chemists to denote caustic potash.

KALI. See KALEE.

KALINJAR, a hill-fortress and hill-shrine in the northwestern provinces of India; on an isolated rock (1,230 feet high), the termination of a spur of the Vindhya Mountains, overlooking the plains of Bundelkhand. The records of the place go back to a period of great antiquity, the name Kalinjar occurring in the "Mahábhárata" as that of a city even at that time famous. The whole rock is thickly studded with ruins of ancient Hindu edifices and other works, including gateways, temples, tanks, caves, statues, inscriptions, etc., the most celebrated of all being the remains of the superb temple of Nil Kantha Mahadeo.

KALISZ (kä′lish), the capital of a province (area 4,377 square miles; pop. about 1,400,000) of the same name in Poland; on the frontier river, the Prosna, 132 miles W. S. W. of Warsaw, with manufactures of cloth. The "Kalisia" of Ptolemy, it is one of the oldest towns in Poland. On Oct. 29, 1706, King Augustus of Poland here routed the Swedes, and on Feb. 13, 1813, the Russians defeated the French and Saxons. Here, too, was signed, Feb. 28, 1813, the treaty of alliance between Prussia and Russia. Pop. about 55,000. It was captured by German troops after a hard fight in 1914.

KALIUM, another name for potassium, whence its symbol K is derived.

KALIYUGA (kä-lē-yō′gä), in Hindu mythology, the last of the four Hindu periods contained in the great Yuga, and corresponding to the "iron age" of classical mythology; it comprised a period of 432,000 solar-sidereal years.

KALKI (käl′ki), in Hindu mythology, the 10th avatar (incarnation) of Vishnu. Nine are believed to be past; this one is future, and many Hindus look forward to it as Christians do to the Second Advent of our Lord. About 1845 a sect sprang up in the Nagpore country called Kalankis. They believed the 10th avatar to have come. They soon died away.

KALM, PETER, a Swedish botanist; born in Finland, in 1715; was Professor of Botany in Abo, and wrote "A Journey to North America" (1753–1761), etc. He died in Abo, Finland, Nov. 16, 1779.

KALMIA, a genus of *Ericaceæ*, tribe *Rhododendreæ*. It consists of evergreen shrubs with whorled leaves. They are found in the United States and in Canada. The leaves of *K. latifolia*, the laurel ivy, spoonwood, or calicobush, are poisonous to many animals. A honey-like juice exuding from the flowers brings on phrenetic excitement. *K. angustifolia*, the haulm-leaved kalmia, is called the sheep laurel, from being poisonous to sheep.

KALMUCKS, a Mongolian race of people, scattered throughout central Asia, and extending W. into southern Russia. The name is not employed by the people themselves, but by the Turkish races of Asia and the Russians to designate the Dörbön (Derbend) Oirad or Four Allied tribes of the Zungars, Torgod (Keraits or Eleuths), Khoshod, and Dörböd, who live in Zungaria; around Koko-nor in N. E. Tibet; in the district called Ordus, within the great loop of the Yellow river of China; on the W. slopes of the Altai (in Kuldja, etc.), and in the steppes between the Don and the Volga and Caspian. These tribes constitute that great division of the Mongol race known as Western Mongols. They are nomads, possessing large herds of horses, cattle, and sheep. Their physical characteristics are those peculiar to the Mongolian race (see MONGOLIAN). In religion they are nearly all adherents of Lamaism. Their language differs from true or Eastern Mongolian only in being more phonetic; but they have an alphabet of their own. The most noteworthy events in their history arose out of the emigration of a large band of the Torgod from Zungaria into Russia in 1650. This band was followed by others composed of Dörböd in 1673 and of Khoshod in 1675. Under Auka Khan (1670–1724) the Kalmucks figured as an important factor in Russian politics, sometimes as enemies, sometimes as allies. But in 1771 a large body of them, chiefly Torgod and Khoshod, returned to the empire of China; settling at Ili, among the Altai Mountains. But there still remain about 110,000 Kalmucks in European Russia; in Asiatic Russia there are probably 55,000 more. The number within the Chinese empire is not known.

KALNA (kal'nä), or **CULNA** (kul'-), a town of Bengal, India; on the Bhagirathi (Hooghly). The town contains numerous temples, and is a station of the Free Church (Scotland) Mission. It does a large amount of trade by river, chiefly in rice and other natural products.

KALOCSA (kō'loch-o), a town of Hungary, near the left bank of the Danube; 86 miles S. from Budapest. It is the seat of an archbishop (bishop's see from 1000 to 1135), and has a cathedral, and an archbishop's palace. The inhabitants grow flax, wine, etc.

KALPI (kal'pē), a town in the N. W. provinces of India, near the bank of the Jumna; 50 miles S. W. of Cawnpur. It figured prominently in the wars waged against the Mogul empire, came definitely into British hands in 1806, and was one of the principal agencies of the East India Company. On May 23, 1858, Sir Hugh Rose here defeated 12,000 rebels. Manufactures sugar-candy and paper; exports grain, cotton, etc. (to Cawnpur and to Calcutta).

KALUGA (kä-lö'gä), chief town of the Russian province of Kaluga; 76 miles N. W. of Tula and 188 S. S. W. from Moscow; on the navigable Oka river, it carries on an extensive trade, especially in corn. Manufactures leather, oil, bast mats, tallow, candles, etc.; but its specialty is "Kaluga cakes," sold throughout Russia to the extent of over $500,000 annually. Pop. about 50,000.

KAMA (kä'mä), a river of European Russia, the principal tributary of the Volga, rising in the province of Viatka, near Glazgov, flowing in a S. W. direction, and joining the Volga about 50 miles N. of Kazan; length, 1,400 miles, most of which is navigable. It is connected with a branch of the Dwina by a canal 12 miles long, establishing water communication between the Caspian and White Seas.

KAMA (kä'mä), the Hindu god of love, corresponding, generally speaking, to the Greek Eros and Roman Cupid. He appears as a beautiful youth riding on a parrot, generally carrying a bow with a string formed of bees, and having five arrows, each tipped with a flower that is supposed to have some amorous influence. Dancing girls or nymphs bear him company, and one carries his banner, the emblem on which is a fish or marine monster on a red ground.

KAMAKURA (-kö'rä), a seacoast village of Japan, 12 miles E. of Yokohama; formerly a noted city, founded before 1199, and the seat of the early shoguns.

KAMALA, the powder, consisting of minute glands, adhering to the capsules of *Rottlera tinctoria*, employed by the natives as a brown dye. Imported from India, and used as a remedy for tape-

worm. It is, however, a potent purgative.

KAMARAN, a little island in the Red Sea, on the Arabian side, nearly opposite Massowah, with an area of 102 square miles, and inhabited by a few fishermen. The island was annexed by Great Britain in 1858, while the telegraph cable was being laid to Bombay.

KAMBALU (-bä'lö), **KAMBALUC**, or **CAMBALUC** (-bä'lök), the capital of China and the residence of the Mongol emperors 1234-1368. It partially corresponded with the part now called the "Tartar City" in Peking, was visited by Marco Polo, etc., in the 13th century, and made the seat of an archbishopric by Pope Clement V. in 1314.

KAMCHATKA (käm-chat'kä), a peninsula of Eastern Siberia, stretching S. into the Pacific between Bering Sea on the E. and the Sea of Okhotsk on the W.; area, 104,260 square miles; pop. about 7,500, consisting of Kamchadales, Koryaks, Lamuts, and Russians. Capital, Petropavlovsk. Pop. about 500. A chain of volcanic mountains runs down the center and reaches 15,408 feet in Kojerevska and 16,988 in Kluchefskaya. The latter was in active eruption at least twice in the 19th century (1854 and 1885). Hot springs abound. The principal river is the Kamchatka, which flows into the Pacific. The climate is colder than in corresponding latitudes in Europe; grass and tree vegetation are luxuriant. The principal occupations of the inhabitants are fishing and hunting. Furs are the most valuable production of the peninsula. The most useful domestic animal is a peculiar kind of dog, which is employed in hunting and sledging. Kamchatka was annexed to Russia at the end of the 17th century, after the expedition of the Cossack chief Atlasof. The Kamchadales—the preponderating race (2,000 in number)—live mostly in the S. They are a hardy people, who dwell in winter in earth pits and in summer in light huts. Their language has no known cognates; but they are now Russianized. See MARITIME PROVINCE.

KAMEHAMEHA (kä-me-hä'me-hä), the name of several Kings of the Sandwich Islands. The most important was KAMEHAMEHA I., surnamed THE GREAT; born in 1753. He subdued and governed the whole group of the Sandwich Islands, having been first made King of Hawaii in 1781. He was progressive in his views and encouraged intercourse with Europeans. He died in Kailua, Hawaii, May 8, 1819.

KAMENETZ. See PODOLIA.

KAMENETZ-PODOLSK (kä'me-nets-pō-dōl'sk') (Polish, Kamieniec), capital of the Russian province of Podolia; near the frontier of Austrian Galicia, on a steep rock above the Smotritza river. It has a Roman Catholic cathedral (1361), and a Greek cathedral (16th century). The town was destroyed by the Mongol chief Batu in 1240; taken by the Turks in 1672; returned to the Poles in 1699; and annexed by Russia in 1795. Pop. about 52,000.

KAMENZ (kä'ments), a manufacturing town of Saxony, 22 miles N. E. of Dresden. It was the birthplace of Lessing. Pop. about 12,000.

KAMERUN (kä-me-rön') the Cameroons (1) a district on the W. coast of Africa, on the Bight of Biafra, until the World War a German possession but now a British protectorate. Pop. whites about 2,000. Natives about 2,540,000. British forces invaded the country in August, 1914, and the fighting against the Germans continued until January 1916 when 700 officers and 14,000 native soldiers were forced to retire into Spanish Guinea and there disarmed. The garrison of the last German fort surrendered in February, to the British. (2) A river in the Kamerun territory. There are several large and thriving towns (including King Bell's town) on the river, through which an extensive trade is carried on in ivory and palm-oil. (3) A mountain range in the territory, the highest peak of which has been estimated at over 13,000 feet.

KAMES, the name given by geologists to banks and ridges of gravel, sand, etc., associated with the glacial deposits of Scotland.

KAMI (kā'mē), in Japanese mythology, the name of certain spirits or divinities. The kami are believed to be partly elemental, subordinate to the deities of the sun and moon, and partly the spirits of men—in fact, every natural agent and phenomenon is supposed to have its own spirit or genius. The number of these kami at the present day is estimated at 3,000, and they are worshipped in temples without statues or images. Each kami is represented by a mirror, as the emblem of purity; and all the rites and ceremonies seem to be typical of purification. The priests who superintend the worship of these temples are called *kannushi*, or the ministers of the spirits.

KAMPEN (käm'pen), a town of Holland; near the mouth of the Yssel;

5½ miles N. W. of Zwolle. It was formerly a Hanse town. The church of St. Nicholas is one of the finest mediæval churches in the country. The inhabitants are engaged in shipbuilding, commerce, fishing, and tobacco manufacture. Kampen is the Gotham of the Dutch. Pop. about 20,000.

KANAGAWA (-gä′wä), a seaport of Japan, on the W. shore of Tokyo Bay, the first Japanese port opened to foreign trade in 1859; pop. about 20,000.

KANAKAS (ka-nak′äz), the native inhabitants of the Sandwich Islands; in New Caledonia and the New Hebrides the name is applied to all the native laborers, without distinction of origin.

KANDAHAR, or **CANDAHAR** (kän-dä-här′), the capital of Central or Southern Afghanistan; 3,484 feet above sea-level. Kandahar is well watered by two canals drawn from a neighboring river, which send to almost every street its own adequate supply; and the same means of irrigation have covered the immediate vicinity with gardens and orchards. Kandahar is a commercial center, trading with Bombay, Herat, Bokhara, and Samarcand. It has been a pivot for the history of that part of Asia during more than 2,000 years. It is supposed to have been founded by Alexander the Great. Mahmud of Ghazni wrested it from the Afghans. In the war of 1878–1880 the British entered Kandahar unopposed, and they held the city till 1881, some months after they had evacuated the rest of Afghanistan. Pop. between 50,000 and 100,000.

KANDAVU, one of the Fiji Islands.

KANE, a borough of Pennsylvania, in McKean co., on the Pennsylvania, the Baltimore and Ohio, and the Kane and Elk railroads. Its elevated site and beautiful surroundings make it an attractive health resort. It has the Kane Summit Hospital. Its industries include glass works, bottle works, lumber mills, etc. Pop. (1910) 6,626; (1920) 7,283.

KANE, ELISHA KENT, an American explorer; born in Philadelphia, Pa., Feb. 3, 1820; was graduated at the Medical Department of the University of Pennsylvania in 1842; joined the United States navy as assistant surgeon in 1843; accompanied the Grinnell expedition in search of Sir John Franklin in 1850–1852. His fame as an Arctic explorer rests on his second expedition in search of Franklin in 1853-1855. He sailed from New York on May 30, in the former year, in the brig "Advance," and reached lat. 80° 35′ N., the highest point ever attained up to that time by a sailing vessel. The hardships endured during this second trip so affected his health that he died in Havana, Cuba, where he had gone to recuperate, Feb. 16, 1857. He was the author of "The United States Grinnell Expedition in Search of Sir John Franklin" (1854), and the "Second Grinnell Expedition" (1856).

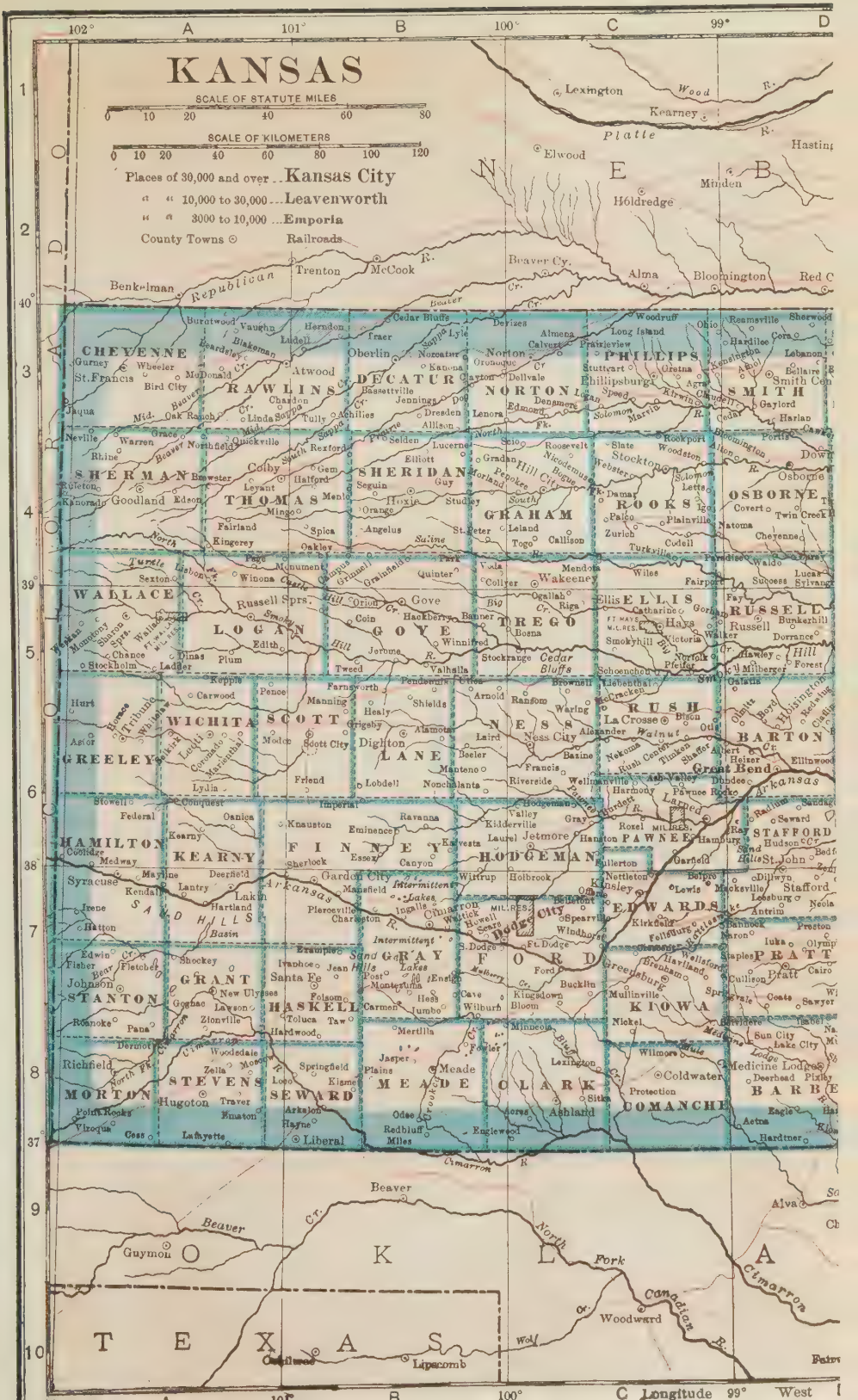
KANEM (kä-nem′), a district of Central Africa, N. and N. E. of Lake Tchad, now belonging to Bornu, but formerly an independent State.

KANGAROO, the genus *Macropus*, and specially the great kangaroo, *M. giganteus*. This species was the first known of the family and first seen by sailors of Captain Cook's expedition on the coast of New South Wales. The great kangaroo has large hind legs, with a huge tail, short fore limbs, and is about the height of a man. It is a vegetable feeder, and is destructive to the crops of the settlers in the less inhabited parts of Australia; in the long-settled districts it is much rarer. Its ordinary method of progression is by a series of great leaps, 10 to 15 feet or more. If when infuriated it can overcome an adversary it will seize him by its fore feet, hug him like a bear, and rip him with the claws of its hind feet. Many other species exist. The hare kangaroo or turatt is *M. leporoides;* the great rock kangaroo, *M. robustus;* the red kangaroo, *M. rufus;* the agile kangaroo, *M. agilis;* the brush-tailed rock kangaroo, *M. penicillatus;* and the tree kangaroo, *Dendrolagus ursinus.*

KANGAROO GRASS, the most esteemed fodder grass of Australia. It grows to a height much above that of the fodder grasses of Great Britain, affords abundant herbage, and is much relished by cattle. The genus is allied to *Anthistiria*, and has clusters of flowers with an involucre. *A. ciliata* is one of the most esteemed fodder grasses of India.

KANGRA (kän′grä), a district of Hindustan, in the Punjab, belonging mainly to the Himalayan chain; area, 8,069 square miles; pop. about 800,000. About a ninth is under cultivation, and large tracts are covered with forests. The inhabitants are a good-looking, fair-complexioned race, mild and peaceable, and much attached to their country.

KANIN, a peninsula in Russia, between the White Sea and the Gulf of Tcheskaya. It extends into the Arctic Ocean and its extremity is called Cape Kanin Noss.


KANSAS
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SCALE OF KILOMETERS
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" " 3000 to 10,000 ... Emporia
County Towns ⊙ Railroads
102° A 101° B 100° C 99° D
Longitude West
NEBRASKA
OKLAHOMA
TEXAS
Republican R.
Platte R.
Arkansas R.
Cimarron R.
North Fork Canadian R.
Beaver Cr.
Sand Hills
Lexington
Kearney
Elwood
Minden
Holdredge
Hastings
Beaver Cy.
Trenton
McCook
Benkelman
Alma
Bloomington
Red Cloud
CHEYENNE
RAWLINS
DECATUR
NORTON
PHILLIPS
SMITH
SHERMAN
THOMAS
SHERIDAN
GRAHAM
ROOKS
OSBORNE
WALLACE
LOGAN
GOVE
TREGO
ELLIS
RUSSELL
GREELEY
WICHITA
SCOTT
LANE
NESS
RUSH
BARTON
HAMILTON
KEARNY
FINNEY
HODGEMAN
PAWNEE
STAFFORD
STANTON
GRANT
HASKELL
GRAY
FORD
EDWARDS
PRATT
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STEVENS
SEWARD
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KIOWA
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Great Bend
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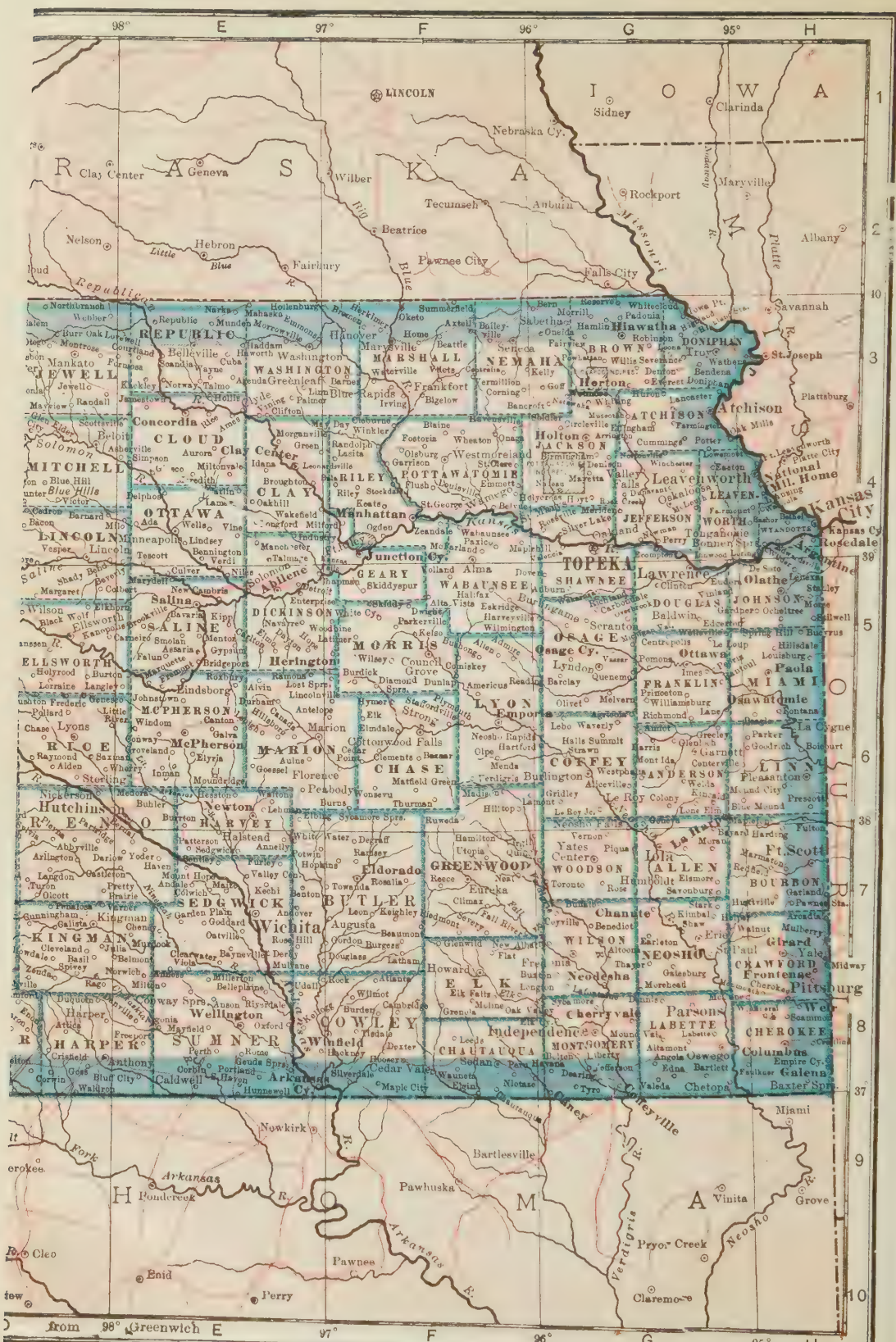
Salina
Topeka
Kansas City
Leavenworth
Emporia


98° E 97° F 96° G 95° H
LINCOLN
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I O W A
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Rockport
Maryville
Albany
Nelson
Hebron
Fairbury
Beatrice
Pawnee City
Falls City
Savannah
REPUBLIC
MARSHALL
NEMAHA
BROWN
DONIPHAN
St. Joseph
JEWELL
WASHINGTON
Frankfort
Horton
Atchison
Concordia
CLOUD
Clay Center
JACKSON
Holton
MITCHELL
RILEY
POTTAWATOMIE
Leavenworth
OTTAWA
CLAY
Manhattan
JEFFERSON
Kansas City
LINCOLN
Junction Cy.
TOPEKA
Lawrence
Olathe
Abilene
GEARY
WABAUNSEE
SHAWNEE
DOUGLAS
JOHNSON
Rosedale
SALINE
DICKINSON
MORRIS
OSAGE
Osage Cy.
Ottawa
Paola
ELLSWORTH
Herington
Council Grove
FRANKLIN
MIAMI
McPHERSON
LYON
Emporia
Osawatomie
RICE
MARION
COFFEY
ANDERSON
LINN
CHASE
Hutchinson
Newton
HARVEY
Halstead
GREENWOOD
Eldorado
Lola
Ft. Scott
ALLEN
BOURBON
SEDGWICK
BUTLER
Wichita
Augusta
Chanute
KINGMAN
WILSON
NEOSHO
CRAWFORD
Girard
Pittsburg
Neodesha
ELK
Howard
Cherryvale
Parsons
LABETTE
CHEROKEE
Wellington
COWLEY
Winfield
Independence
MONTGOMERY
Columbus
HARPER
SUMNER
CHAUTAUQUA
Sedan
Arkansas City
Galena
Baxter Spr.
Miami
Nowkirk
Bartlesville
Arkansas R.
Ponderosa
Pawhuska
Vinita
Grove
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Enid
Pawnee
Perry
Pryor Creek
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KANIZSA (NAGY), free town, Hungary, situated 136 miles S. W. of Budapest. The citizens are mostly Magyars and in religion the Roman Catholic church prevails. A Piarist and Franciscan cloister are located here. The town has a considerable trade in live stock and agricultural products. Pop. about 27,500.

KANKAKEE, a city and county-seat of Kankakee co., Ill.; on the Kankakee river, and the Illinois Central and other railroads; 56 miles S. W. of Chicago. It is an important railroad junction and trade center, is principally engaged in the manufacture of horseshoe nails, has an excellent system of waterworks supplied from the river, and contains the Illinois Eastern Insane Hospital, Emergency Hospital, conservatory of music, public library, and National and private banks. The tax valuation is about $6,500,000. Pop. (1910) 13,986; (1920) 16,753.

KAN-KIANG, a river of China, which traverses the province Kiang-si from S. to N., and after a course of 350 miles, flows into the Yang-tse-Kiang.

KANO (kä-nō′), capital of a province of the same name (pop. about 2,250,000) in the Negro State of Sokoto, Central Africa (now part of British Northern Nigeria) in the middle of the country, about 250 miles S. S. E. of the city of Sokoto. Principal industry weaving and dyeing of cotton cloths. Pop. is about 100,000.

KANSAS, a State in the North Central Division of the North American Union; bounded by Nebraska, Missouri, Oklahoma, and Colorado; land-surface area, 81,700 square miles; admitted to the Union Jan. 29, 1861; number of counties, 105; pop. (1890) 1,427,096; (1900) 1,470,496; (1910) 1,690,949; (1920) 1,769,257; capital, Topeka.

Topography.—The State, lying in the great central plain of the United States, has a generally flat or undulating surface. Its altitude above the sea ranges from 750 feet at the mouth of the Kansas river to 4,000 feet on the W. line of the State. The rivers flow through bottom-

KANGAROO

lands, varying from ¼ to 6 miles in width, and bounded by bluffs, rising 50 to 300 feet. The Missouri river forms nearly 75 miles of the State's N. E. boundary. The Kansas river, formed by the junction of the Smoky Hill and Republican rivers, joins the Missouri at Kansas City, after a course of 150 miles across the State. The Arkansas, rising in Colorado, flows with a tortuous course, for nearly 500 miles, across three-fourths of the State. It forms, with its tributaries, the Little Arkansas, Walnut, Cow Creek, Cimarron, Verdigris, and Neosho, the S. drainage system of the State. Other important rivers are the Saline and Solomon, tributaries of the Smoky Hill; the Big Blue, Delaware, and Wakarusa, which flow into the Kansas; and the Osage, a tributary of the Missouri.

Geology.—The rock system of Kansas is exceedingly simple. Over almost the

entire State the rocks are monoclinal and dip gently to the W. N. W., at an average rate in the E. and central portions of the State of about 15 feet to the mile, or about double the average slope of surface to the E. In the W. part of the State the strata lie horizontally. The geological formations succeed each other in a regular ascending series, from S. E. to N. W. The outcrops begin with the sub-Carboniferous, in a small triangular tract not exceeding 60 square miles in extent, in the S. E. corner of the State; followed by the Carboniferous, covering the E. quarter of the State; the Permian, or more properly the permo-Carboniferous, in the E. middle covering a belt about 60 miles wide, extending from Marshall county S. to Cowley and Sumner counties; the Triassic, embracing a triangular tract of about seven counties S. of the Arkansas river, with its apex in the great bend of the Arkansas and its base along the S. line of the State from Sumner county to Clark; the Cretaceous, in the W. middle, covering about one-third of the State, from Washington, Republic, Jewell, and Smith counties, on the N. line of the State, S. E. to the Arkansas river and the S. W. corner of the State; and end with the Tertiary, covering about 20 counties in the N. W. quarter of the State, with occasional tracts in the S. W. and S. There is a very small amount of post-Tertiary or recent formation in the valleys, scattered over the middle and W. portions of the State. Glacial drift covers the Permian and Carboniferous in the N. E. corner of the State as far W. and S. as the Big Blue and Kansas rivers.

Minerals.—The minerals of Kansas are lead and zinc, obtainable from the sub-Carboniferous; bituminous coal, petroleum and gas, from the Carboniferous; salt and gypsum from the Permian and Triassic; chalk and lignite from the Cretaceous; lignite and silica in an exceedingly fine state from the Tertiary.

Fossils.—The fossils of the Carboniferous formation are all marine, consisting of foraminifera, sponges, crinoids, brachiopods, and lamellibranchs. They are quite numerous, limestone rocks in some places being solidly full of their shells. The Cretaceous fossils consist of marine and fresh water shells, fishes, saurians, turtles, birds, and impressions of leaves of aerial plants and trees, such as fig, laurel, magnolia, and other trees of sub-tropical climate; poplar, willow, birch, and other trees of colder climate; together with walnut, oak, sycamore, and other trees similar to those of the present day. In the recent formations are found remains of horse, elephant, mastodon, and other mammals of great size.

Mineralogy.—The chief mineral product is petroleum. In 1918 there were produced 45,451,017 barrels of petroleum, valued at $100,546,202. Kansas contains part of the Kansas-Oklahoma oil fields. Other mineral products are lead, zinc and coal. The production of the latter in 1919 was about 5,750,000 short tons. The State is also a large producer of clay products, and these are valued at over $2,000,000 annually. In the production of salt, Kansas ranks fourth among the States. Other mineral products of the State include sulphur, chalk, alum, portland cement, manganese, lime, marble, kaolin, gypsum, ochre, brown hematite, and numerous other ores of iron.

Soil.—The soil is exceptionally rich in those mineral substances necessary to support vegetation, and is consequently very fertile. In the E. it consists of a black sandy loam with a vegetable mold, and in the W. it is of a lighter color, but greater depth. The bottom lands have a soil from 2 to 10 feet in depth, and the hills, from 1 to 3 feet. Only a small portion of the State consists of woodland, the most abundant trees being the ash, cottonwood, oak, elm, walnut, hickory, maple, mulberry, sycamore, box elder, willow, cherry, redbud, and pecan.

Agriculture.—The excellent soil of Kansas makes it one of the foremost agricultural States. The acreage, production and value of the principal crops in 1919 was as follows: corn, 4,475,000 acres, production 69,362,000 bushels, value $97,107,000; oats, 1,574,000 acres, value $32,287,000; wheat, 11,624,000 acres, production 151,001,000 bushels, value $324,652,000; hay, 1,832,000 acres, production 4,507,000 tons, value $71,211,000; potatoes, production 5,168,000 bushels, value $9,819,000; sorghums, 1,040,000 acres, production 17,888,000 bushels, value $26,832,000.

Manufactures.—In 1914 there were 3,136 manufacturing establishments, employing 41,259 wage earners. The capital invested amounted to $163,709,000, the wages paid to $25,970,000, the value of the materials used $261,248,000, and the value of the products $323,234,000. The chief manufacturing establishments are located at Kansas City, Argentine, Topeka, Leavenworth, and Wichita. The principal articles of manufacture include cured and packed meats, flour and grist, railroad cars, dairy products, foundry and machine shop products, masonry, millinery, books, saddlery and

harness, soap and candles, tobacco and cigars, and refined zinc.

Banking.—On Oct. 31, 1919, there were 234 National banks in operation, having $12,353,000 in capital, deposits $101,287,000 and surplus $6,942,000. There were also 1,068 State private banks, having total deposits of $280,297,000 and $12,488,000 surplus.

Education.—The school population is about 625,000, and enrollment about 410,000. The average daily attendance in 1920 was about 300,000. The teachers number about 17,000. The State institutions of learning are the State University at Lawrence, attendance 1,251, State Normal School at Emporia, State Agriculture College at Manhattan. For higher education there were over 200 public high schools, and many private secondary schools. The colleges and universities for both sexes include the Oswego College for Young Ladies at Oswego, and the College of the Sisters of Bethany at Topeka. Among the most noted colleges are the Baker University at Baldwin, Washburn College at Topeka, Campbell University at Holton, St. Mary's College at St. Mary's, Ottawa University at Ottawa, Southwest Kansas College at Winfield, Bethany College at Lindsborg, and McPherson College at McPherson.

Transportation.—The total mileage of first track railroads in the State is 9,648. The Atchison, Topeka, and Santa Fe and the Missouri Pacific are the longest lines.

Churches.—The strongest denominations in the State are the Methodist Episcopal; Roman Catholic; Regular Baptist, North; Disciples of Christ; Presbyterian, North; United Brethren; Congregational; Friends; and Lutheran, General Council.

Finance.—The receipts for the year ending June 30, 1918, amounted to $15,066,209, and the disbursements to $15,005,384. The balance in the treasury amounted to $2,795,546. The State has no bonded debt.

Charities and Corrections.—The following institutions are under the control of the State Board of Administration: Penitentiary at Lansing; Industrial Reformatory at Hutchinson; Girls' Industrial School at Beloit; Boys' Industrial School at Topeka; Industrial Farm for Women at Topeka; hospitals at Topeka, Osawatomie, Larned and Parsons; Home for Feeble Minded at Winfield; Orphans' Home at Atchison; Tuberculosis Sanitarium at Norton; School for the Blind at Kansas City; and School for the Deaf at Olathe.

State Government.—The governor is elected for a term of two years, Legislative sessions are held biennially and are limited to 50 days each. The Legislature has 40 members in the Senate, and 125 members in the House. There were 8 representatives in Congress. The government in 1920 was Republican.

History.—Kansas was included in the Louisiana Purchase of 1803, and is believed to have been visited by an army of Spaniards and Indians in 1541. It was explored by the French in 1724, and by Lieut. Zebulon M. Pike, of the United States army, in 1806. It was made a Territory in 1854, and disputes between the slavery and abolition parties made Kansas a scene of bitter partisan conflict. The repeal of the Missouri Compromise of 1820 opened a new field for the extension of slavery, of which the slaveholders of Missouri and the South hastened to avail themselves, while the anti-slavery party of the North made equally vigorous efforts to people the new Territory. The result was a series of conflicts which continued for four years, fights taking place, towns being burned, and illegal voting freely indulged in. In the end the party opposing slavery triumphed; a constitution excluding slavery was adopted in 1859, and Kansas was admitted as a State, Jan. 29, 1861. During the Civil War Kansas sent into the field a larger number of soldiers, in proportion to its population, than any other State. After the Civil War there was a great influx of immigrants, and since then there has been peace and steady progress.

KANSAS CITY, a city and county-seat of Wyandotte co., Kan.; at the junction of the Missouri and Kansas rivers, and on the Missouri Pacific, the Union Pacific, and the Chicago Great Western railroads; opposite Kansas City, Mo., with which it has many business interests in common, especially the meat-packing industry. The two cities constitute the second largest livestock and meat-packing place in the United States. The city has also an extensive grain and flour trade, many elevators, large smelting and refining works, the shops of the Missouri Pacific, Union Pacific, and Rock Island railroads, iron and steel works and foundries. There is a fine system of parks and boulevards. There are trolley lines to Kansas City, Mo., Topeka, and Leavenworth, bridges across the Kansas river within the city limits, electric and cable street railroads, a system of water-works supplied from the Missouri river, National and State

banks. The city contains the State Institution for the Blind, the Kansas City University, Western University College of Medicine and Surgery, and Bethany and St. Margaret's Hospitals. Pop. (1910) 82, 331; (1920) 101,078.

KANSAS CITY, a city of Missouri, in Jackson co., at the junction of the Missouri and Kansas rivers. It is on the boundary between Missouri and Kansas, and is directly opposite Kansas City, Kan. Kansas City is one of the most important railroad centers of the United States, and is on the Chicago and Alton, the Atchison, Topeka and Sante Fe, the Chicago Great Western, the Chicago, Rock Island and Pacific, the Chicago, Milwaukee and St. Paul, the Union Pacific, and other railroads. One of the largest Union stations in the United States is used by several of these railroads. Four enormous bridges span the Missouri River. In addition to railroad facilities, there is transportation on the Missouri River from Kansas City to St. Louis. The street railway system of the city includes nearly 300 miles of track. Kansas City has greatly increased in recent years, as an interurban railroad center. The city is situated on three hills. The manufacturing and wholesale districts are for the most part on the first, and are separated from the central, business or retail district, which is on the second hill, by high bluffs. The residential sections of the city are on the third and highest elevation. There is an excellent street system, consisting of about 500 miles of paved streets. The notable public buildings include the Union Station, city hall, court house, Board of Trade building, Live Stock Exchange, Y. M. C. A. building, a General Hospital, and a number of handsome high schools. The educational institutions within a short distance include the University of Missouri, the University of Kansas, William Jewell College, Park College, and Baker University. There is a comprehensive system of public schools, supplemented by special schools. Kansas City is notable for its park and boulevard system. 50 miles of boulevard connect 2,600 acres of public parks within the city limits. Kansas City is the distributing point for a vast agricultural region of the west and south and it has large wholesale interests. An immense business is done in grain, live stock, and meat packing. Kansas City is the largest winter wheat market in the world, and the second market in the receipts of general grain in the United States. Its grain elevators have a capacity of over 18,000,000 bushels. It is also one of the most important hay centers. The total value of live stock marketed is over $200,000,000 annually. It also ranks first in the sale of yellow pine lumber, and third as a general lumber center. In greater Kansas City are nearly 1,500 factories. The products in 1914 amounted to $319,000,000. In that year the city ranked tenth in the value of the manufactured output. In the city is located the Federal Reserve Bank of District No. 10, which includes the States of Kansas, Nebraska, Wyoming, Colorado, one-half of New Mexico, one-half of Oklahoma, and one-fourth of Missouri. There were in 1919 15 National banks. The bank clearings in that year amounted to $11,036,406,000. The total assessed valuation in 1920 was $288,774,416. The budget for that year was $4,153,500.

The first permanent settlement of Kansas City was in 1820, by a company of French fur traders. The town was laid out in 1838 and was incorporated in 1850 under the name of Town of Kansas. The name was changed to Kansas City in 1853. Pop. (1900) 163,752; (1910) 248,181; (1920) 324,410.

KANSAS RIVER, a large river, formed by the union of the Smoky Hill Fork and Solomon river, 10 miles W. of Abilene, and so called from the tribe of Indians which once dwelt on its shores. It flows E., joins the Missouri river between Wyandotte and Johnson county, on the E. border of Kansas, and traverses a fertile plain interspersed with heavily wooded hills and bluffs. Its most important affluents are Grand Saline Fork, Big and Little Blue rivers, and Republican Fork.

KANSAS, UNIVERSITY OF, a co-educational non-sectarian institution in Lawrence, Kan.; founded in 1864; reported at the close of 1919: Professors and instructors, 292; students, 3,312, volumes in the library, 125,000; president, Frank Strong, Ph. D.

KANSAS-NEBRASKA BILL, THE, an act passed by Congress in 1854, during the administration of President Franklin Pierce, for the purpose of organizing the Territories of Kansas and Nebraska. It provided, among other things, that the question of slavery should be left to the people; that questions involving the title to slaves were to be left to local courts, with the right to appeal to the United States Supreme Court; and that the fugitive slave laws were to apply to the Territories. Further, so far as this region was concerned, the Missouri Compromise of 1820, which

excluded slavery from the Louisiana purchase N. of lat. 36° 30′ N., except from the State of Missouri, was declared repealed. This measure disrupted the Whig party, most of the S. Whigs joining the Democrats, and led to the organization of the Republican party in 1856. It was also instrumental in bringing about the Civil War.

KANSAS WESLEYAN UNIVERSITY, a co-educational institution in Salina, Kan.; founded in 1885 under the auspices of the Methodist Episcopal Church; reported at the close of 1919: Professors and instructors, 17; students, 325; president, L. B. Bowers, Ph. D.

KANSOO, or **KANSU** (kän-sō′), an inland province in the N. of China; area, 86,608 square miles; pop. about 6,000,000. It is mountainous, some of the peaks rising more than 10,000 feet above sea-level, and is watered by the Yellow river, but has few fertile tracts. The climate is cold, but wheat, barley, and millet grow, and large flocks and herds are maintained. Capital, Lan-choo-foo.

KANT, IMMANUEL (känt), a German philosopher; born in Königsberg, Prussia, April 22, 1724. His three great works were: "Critique of Pure Reason" (1781); "Critique of the Practical Reason" (1788), which bases the ideas

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of God, freedom, and immortality on the ethical consciousness alone, denying that we have any right to hold them otherwise; "Critique of the Power of Judgment" (1790). He wrote also on cosmic physics, æsthetics, pedagogy, ethics, the metaphysical basis of law, etc. He was Professor of Logic and Metaphysics at the University of Königsberg. He died in Königsberg. Feb. 12, 1804.

KANTARA, a village on the east bank of the Suez Canal, 40 miles south of Port Said. In 1917 it was used as a base of supply by the British forces in Egypt, engineering shops being established and quays built. It was also made the terminus of a military railway across the Sinai peninsula and figured in the Syrian campaign during the World War.

KANURI (kä-nō′rē), or **KANORI**, a Sudanese people, who form the principal portion of the population of Bornu.

KAOLIN, or **KAOLINITE**, a mineral element found in granite, and generally arising from the decomposition of the felspar. It is essentially a hydrated silicate of alumina. After being levigated, it is extensively used in the manufacture of porcelain, and is hence called China clay. The name kaolinite was applied by Johnson and Blake to a soft powder made up of minute, transparent, pearly scales, which is always present in greater or lesser quantity in all kaolin.

KARACHI (-rä′chē), a district of Sind, India, bounded on the W. by Baluchistan, on the S. by the Arabian sea, on the E. by the Indus; area 14,115 square miles; pop. about 600,000. Also a seaport and the chief city of Sind, on Karachi Bay; annexed by the British in 1843; foreign trade amounted in 1898–1899 to 12,896,636 tens of rupees; pop. about 175,000.

KARADSCHA. See PHOCÆA.

KARAFUTO, the part of the island of Sakhalin, off the east coast of Siberia, belonging to Japan. The island covers an area of 27,823 square miles, the part N. of the 50th parallel of latitude belonging to Russia, and the part S. to Japan. Karafuto's area is 13,048 square miles, almost half of the island. Pop. 1917, about 68,000.

KARAGEORGEVITCH FAMILY, formerly reigning dynasty of Serbia, and now of Jugoslavia, of which King Peter is the present head. The family originated with Karageorge (Black George) Petrovitch, born in 1770, who led the Serbians in revolt against the Turks in 1801. The final result of his operations was a victory in 1806, after which he was recognized as Prince of Serbia by the Porte. In 1812 he was compelled to flee to Russia, by the success of the Turkish armies in again attacking the Serbians. During his absence the Serbians again revolted suc-

cessfully under Milosh Obrenovitch who caused his rival, Black George, to be murdered, in 1817. The Obrenovitch dynasty remained in power until 1903, when its reigning representative, Alexander, was assassinated by his own officers on account of his corrupt tendencies. Peter, the senior representative of the house of Karageorge, then living in exile in Paris, was thereupon called to the throne, on which he has remained ever since.

KARAITES (kär′ā-īts), the descendants of the ancient Sadducees. Their system was revised by Anan ben David, A. D. 761 or 762. They reject tradition, and in this respect bear the same relation to the Talmudic Jews that Protestants do to Roman Catholics. They number a few thousand. They are found in Russia, Galicia, Constantinople, Jerusalem, etc.

KARAK, or KHARRACK (kä-räk′) (the Icarus of Arrian), an island of Asia, in the Persian Gulf, belonging to England, 35 miles N. W. of Bushire. Area 13 square miles. This island is of some importance as affording a secure anchorage for ships, and a station where they may water and refit. It has successively belonged to the Dutch, Arabs, Persians, and French. The English finally took possession of it during the war with Persia in 1839.

KARAKORUM (kä-rä-kō′rum), (1) The Mustagh or Muztagh range is that part of the Himalayas which lies to the W. of the Indus and extends as far as the head of the Gilgit valley. It embraces some of the loftiest peaks of the Himalayan system. (2) The name properly appropriate to a pass (18,550 feet), the culminating point of the route between India and East Turkestan. The old Mongolian capital, to the N. of the desert of Gobi, on the Orkhon, a tributary of the Selenga river; the ruins remain.

KARAMAN (kä-rä-män′), a town of Asiatic Turkey, in Karamania, 58 miles S. S. E. of Konieh. It is situated at the foot of a spur of Mount Taurus, and, though formerly a large place is now unimportant. Manufactures cotton fabrics. Karaman was the capital of a Turkish kingdom, which lasted from the time of the partition of the Seljuk dominions of Iconium till 1486, when Karamania was subjected by the Ottoman sultan, Bajazet II., from which time Konieh became the seat of the pashalic. Pop. between 7,000 and 8,000.

KARAMNASA, a river in the presidency of Bengal, British India; after a course of 146 miles, during which it forms for some distance the dividing line between Bengal and the Northwestern provinces, enters the Ganges. The Hindus hold it in the greatest abhorrence, and will neither drink nor touch its waters, though they are of crystal clearness and abound in fish.

KARA (kä′rä) **SEA**, the portion of the Arctic Ocean between Nova Zembla and the Yalmal Peninsula, off the Siberian coast. The Obi and Yenisei rivers discharge their waters into its N. E. corner. Since Nordenskjöld's famous voyage in the "Vega" (1875), various navigators have demonstrated the navigability of the sea. The Kara Sea being thus navigable for about two months (July to September) in the year, can be made available for trade with Siberia.

KARATEGIN (kä-rä-tā-gēn′), a country of central Asia, forming the E. province of Bokhara, and having the Russian province of Khokand on the N.; area 8,310 square miles. It is a highland region (6,000–7,000 feet) and is traversed from E. to W. by the Surkhab or Kizil-su, a tributary of the Amu-Daria. In winter (October to May) the climate is very severe; nevertheless much fruit and corn are grown. The people, Tajiks by race, number about 100,000, and about 5,000 nomad Kirghiz. The native khans claimed to be descended from one of Alexander's captains, and only lost their independence, to Bokhara, in 1868.

KARAULI (ka-rä-lē′), a native State in Rajputana, India, separated by the Chambal river from Gwalior; area 1,242 square miles; pop. about 200,000, mostly Hindus. It is a hilly country, especially rich in timber. Capital Karauli, 75 miles N. W. of Gwalior, defended by a sandstone wall two miles in extent; pop. about 30,000.

KARELIA (kär-ā-lē′ä), an old name for the S. E. part of Finland, annexed to Russia by Peter the Great in 1721. The Karelians properly so called are a branch of the Finnic race, and about a million dwell in the E. parts of Finland and the adjoining provinces of Russia from Archangel to Tver.

KARELINITE (kar′e-lin-īt), oxide of bismuth, with formula BiO_3. Massive, with crystalline structure; color, lead-gray; luster metallic when cut. Is found at the Savodinsk mine, Altai Mountains, mixed with earthy sulphide of bismuth.

KARIKAL (kä-ri-käl′), the second in importance of the French possessions in India, on the Coromandel coast, 12 miles N. of Negapatam; area nearly 53 square miles; pop. about 65,000. It is a fertile tract, well supplied with rivers and canals, and largely given up to the cultivation of rice. Capital, Karikal, a mile from the sea; it has been four times taken by the British. There is an active trade in rice. Pop. about 20,000.

KARLOVO, a town in Eastern Rumelia, 30 miles N. of Philippopolis, at the foot of the highest peak of the Balkan Mountains, has manufactures of lace and cloth; about 100 years old; in 1877, after a determined resistance, it was taken and pillaged by Suleiman Pasha; pop. about 10,000.

KARLSBAD. See CARLSBAD.

KARLSKRONA, an important port and the naval headquarters of Sweden. Situated on the Baltic, about 250 miles from Stockholm, it has one of the largest navy yards in Europe, equipped with dry-docks, arsenals, and shipyards, protected by strong harbor fortifications. The streets of the city are well laid out and there are many parks and promenades. The chief industries are anchor making and the manufacture of matches. Pop. about 30,000.

KARLSRUHE. See CARLSRUHE.

KARLSTAD, a city in Sweden located on the island of Thingvalla, about 165 miles W. of Stockholm. Connected with the mainland by two large bridges, it is a well-built little city with a wonderful situation among the lakes and hills of Sweden. A conference between Norway and Sweden was held here in 1905. Pop. about 20,000.

KARLSTADT, a city of the recently formed State of Jugo-Slavia, situated about 35 miles S. of Agram. A strongly fortified city, it has a large armory, and is the seat of a Greek Oriental bishop. Pop. about 17,500.

KARMA, in Buddhism, the accumulation of merit or demerit which remains when an individual existence has come to an end. It is the summing up of the actions of the life that has just ceased, and of all the previous lives in the same series, and determines the nature, condition, locality, and future of a new sentient being, into which it passes.

KARMATHIANS, a religious and communistic sect into which the Ismaîlîs developed in Asia under the head of Hamdan Karmat, a peasant-prophet in the region of Kufa. The secret society soon organized itself and began a formidable peasant war. Damascus had to ransom itself; Baalbec was taken and its inhabitants put to the sword. Abu Taher in 923 took and plundered Bassora; next year he plundered a caravan of 20,000 pilgrims returning from Mecca; and in 925 captured and plundered Kufa, killing or enslaving the inhabitants. In 930 during the Hajj he took Mecca, killing 30,000 persons, choked the well Zem Zem with corpses, and carried away the black stone. Then he threatened Bagdad with only 500 horse from among his 107,000 armed zealots. During the next eight years there was no Hajj, but it was resumed on a payment of 25,000 dinars by the calif to Abu Taher. After a 22 years' absence the black stone was brought back to Mecca by the Karmathians and ransomed. During the next 100 years the sect gradually succumbed to the sword and to natural causes, but not till it had acted as a powerful dissolvent on the califate.

KARNAK (kär′nak), a village in Egypt built on the site of Thebes, on the bank of the Nile, and renowned for its magnificent architectural antiquities. The principal one of these is the Great Temple, 1,200 feet long and 330 feet wide. In this are found great colonnades, obelisks, and a vast quantity of sculptures. Various colored marbles, sandstones and granite are used. Other smaller temples abound, beautifully ornamented with mural decorations which portray the kings, divinities and recreations of those ancient peoples. These temples were erected at various times from 1500 B. C. to 28 B. C.

KARNUL (kur-nöl′), a town in Madras presidency, British India, 110 miles S. by W. from Haidarabad. Fever is epidemic. The district is separated on the N. by the Krishna from the Nizam's dominions; area 7,788 square miles; pop. between 700,000 and 750,000. The canal of the Madras Irrigation Company traverses it for 140 miles. Karnul suffered very severely during the famine of 1877–1878.

KÁROLYI (kä-rōl′yē), **COUNT ALOYS DE NAGY**, an Austrian statesman; born in 1825. He filled various diplomatic posts at Hanover, Berne, Rome, Athens, London, Copenhagen, and St. Petersburg. At Zurich in 1859, he concluded peace with Italy and France after the unfortunate campaign which ended at Solferino. Toward the end of 1859 he went to Berlin as ambassador, where he remained till the Austro-Prus-

sian rupture. He returned to Berlin as ambassador Dec. 22, 1871, and soon took rank as one of the most distinguished and experienced diplomatists there. In February, 1879, he was sent to England as ambassador. He was one of the members of the Berlin Congress. He died in 1889.

KÁROLYI, COUNT MICHAEL, a Hungarian statesman; born of a noble wealthy family, was educated for a life of leisure, but at a comparatively early age became interested in politics. Gradually, as a member of Parliament, he became known as the Don Quixote of Hungarian politics. Beginning as a conservative, he turned toward liberalism, and before the European War was waging a campaign for the separation of the Kingdom from the Austrian Empire. When the war broke out in 1914, he was in the United States, organizing the sentiment of the Hungarians in this country in favor of his propaganda. On his return he was interned for a while in France, but his well-known anti-German sentiments caused his release. He was strongly opposed to the war. On Oct. 31, 1918, after the collapse of the Austrian Empire, the liberal and radical elements of Hungary raised Karolyi to the premiership of the Government of the country, as a preliminary to proclaiming it a republic. Karolyi's task was extremely difficult, on account of the attitude of the Allies, who gave him no support in his endeavor to save the remnants of Hungarian nationality. On March 22, 1919, he abandoned his efforts and surrendered the reins of government to the Communists, or extreme Socialists, who were at the time the only political force organized.

KARPATHIAN MOUNTAINS. See CARPATHIAN MOUNTAINS.

KARR, ALPHONSE (kär), a French writer; born in Paris, Nov. 24, 1808. He was educated at the College Bourbon. Among his novels were "The Shortest Way" (1836); "Genevieve" (1838); "Clotilde" (1839); "A Journey Around My Garden" (1846). "Woman" (1853) was a study of morals. One of his most characteristic efforts was the series of papers called "Les Guêpes," anecdotic, critical, witty, satirical, caustic, in fact well-nigh unique. He died in St. Raphael, Var, Sept. 29, 1890. His daughter, THERESE KARR (born 1835), published tales and historical books.

KARRI, a valuable timber largely exported from western Australia, and obtained from an enormous tree belonging to the eucalyptus family.

KARS (kärs), a fortress of Russian Armenia, about 110 miles N. E. of Erzerum. It is on a tableland of upward of 6,000 feet in elevation. Pop. about 35,000, mostly Armenians, who carry on an active transit trade. In 1828 Kars was taken from the Turks by the Russians under Paskevitch. It was brilliantly defended by the Turks under General Williams for six months in 1855. At the beginning of the war of 1877–1878 Kars was invested by the Russians; but relieved in July by Mukhtar Pasha; besieged again in the autumn, it was carried by storm Nov. 18, 1877, by General Lazareff. Kars, long a bulwark of the Ottoman empire in Asia, was one of the Armenian fortresses, the cession of which to Russia was agreed to by the Berlin Congress in 1878.

KARSHI (ancient Nakhsheb), a town of Bokhara, central Asia. Commercially it is of great importance in the transit trade between Bokhara, Kabul, and India. Its knives and firearms are exported to all parts of central Asia, Persia, Arabia and Turkey. Pop. about 25,000, mostly Usbegs, with a mixture of Tajiks, Indians, Afghans, and Jews.

KARST, THE, a desolate limestone plateau in Austria, at the base of Istria. It is noted for its subterranean streams, its rocks, caves, and fertile pits, the latter both small, and large enough to contain groves, forests, and temporary lakes formed by the rainfall. The famous Adelsberg grotto is here.

KARUN (kä-rön') **RIVER,** the Ulai of Dan. viii: 2, the sole navigable river of Persia, rising in the Zardah Koh Mountains, near Ispahan, and flowing W. through gorges of the Bakhtiári range to Shuster, the capital of the province of Arábistán, where it becomes navigable.

KASANLIK, a town of Eastern Rumelia, at the foot of the Balkans, five miles from the S. end of the Shipka Pass, and 87 miles N. W. of Adrianople. It manufactures attar of roses. Its capture by the Russians Jan. 7, 1878, led to the surrender of the Turkish defenders of the Shipka Pass. Pop. about 25,000.

KASCHAU (kä'show), one of the oldest and handsomest towns of Hungary; in the valley of Hernad, 130 miles N. E. of Budapest. The cathedral of St. Elizabeth (built 1270–1468) is the finest Gothic edifice in Hungary. The town ranks as the provincial capital of northern Hungary, has an agricultural institute, and a royal tobacco factory; stoneware, furniture, starch, nails, and paper are also manufactured. Kaschau is cele-

brated for its hams. Kaschau figured prominently during the Hungarian revolution of 1848. Pop. about 50,000.

KASHAN (kä-shän′), one of the most flourishing towns of Persia, 3,690 feet above sea-level, and 92 miles N. of Ispahan. The vicinity is celebrated for its fruit, particularly melons and pears, and the town for its extensive manufactures of silk-stuffs, gold brocade, glazed tiles, carpets, and copper-wares. It abounds, like all Persian towns, in mosques, bazars, and baths. Pop. between 30,000 and 40,000.

KASHGAR, the capital of Eastern Turkestan, Chinese empire; on a fertile and well-watered plain, 4,043 feet above sea-level; between the old city and the new (1838, containing the palace of the Chinese governor of eastern Turkestan). It is important commercially and strategically; in 1759 it was conquered by the Chinese, who held it with short intervals till 1863, when Yakub Beg made it his capital, the Chinese again obtaining possession of it in 1877. Pop. between 60,000 and 70,000.

KASHKAR, a large species of sheep inhabiting the lofty plateaus of central Asia. The male has very large horns bent circularly, while the female has horns resembling those of a goat.

KASHMIR, or **CASHMERE**, an extensive principality in the N. W. of Hindustan, subject to a ruler (the Maharajah) belonging to the Sikh race. The principality embraces not only Kashmir proper, but also Jammu or Jummoo, Baltistan or Little Tibet, Ladakh, Gilghit, etc.; area, estimated 80,900 square miles; pop. about 3,000,000. Kashmir is largely a region of mountains. The country is watered by the Upper Indus and its tributaries, and by the Jhelum and Chenab. Kashmir proper, which forms a small portion of the whole, is a valley surrounded by gigantic mountains, the Himalaya and Hindu Kush, and traversed by the river Jhelum (formerly Hydaspes). There are 10 chief passes through the mountains into this valley varying in height from about 9,000 to 12,000 feet. Forests on the slopes, fields of corn, rice crops along the sides of the rivers, rich orchards, and an abundant growth of flowers distinguish the district, but the fruits of warm climates do not ripen here. Among its minerals are iron and plumbago. Sulphur springs are common. Earthquakes frequently occur, and in 1885 one caused the loss of thousands of lives. Bears, leopards, wolves, the ibex, and chamois are among the animals. The flora has a strong affinity to that of Europe; the deodar cedar forms extensive and valuable forests. The common European fruits are grown, and attention is now being paid to the culture of the vine. The chief crops are wheat, barley, rice, and Indian corn, and two harvests are reaped in the year.

The chief manufacture is that of the celebrated Kashmir shawls. The genuine Kashmir shawls owe their superiority to the material of which they are made, which is, properly speaking, not wool. but a fine kind of down with which the animals of this region are clad during the winter season. This down is obtained in great quantities from the Kashmir goat, the yak of Tibet, and the wild sheep. The average time taken to manufacture a good Kashmir shawl is from 16 to 20 weeks. The inhabitants of Kashmir are a fine race physically, tall, strong, and well-built, with regular features. There are 13 separate dialects in use. The Maharajah is independent, but his relations with other states are subject to the authority of the Government of India. The capital of the whole principality is Jammu. Srinagar (or Kashmir) is the Maharajah's summer residence and largest town. Pop. about 125,000.

KASHMIR, or **CASHMERE GOAT**, a variety of the common goat remarkable for its fine downy fleece, said to be found in perfection only in Tibet in the neighborhood of Lhassa, but also found in other parts of this region, including Ladakh, now a province of Kashmir. A full-grown goat yields not more than eight ounces, the fine curled wool being close to the skin.

KASKASKIA (-kas′-), a river of Illinois, rising in the E. center of the State, flowing S. W., and entering the Mississippi at Chester; length, nearly 300 miles. On its right bank, a few miles from the mouth, is the city of Kaskaskia, the first capital of Illinois Territory.

KASKASKIA, FORT, an ancient and Revolutionary fort on the site of the present city of Kaskaskia, Ill.

KASSAI (kä-sī′), a river of Central Africa, a tributary of the Kongo, which it joins on the S. bank a few miles above Stanley Pool; has 800 miles of unbroken steam navigation, and pours into the Kongo with a stream of 5 miles an hour, 2 miles wide and no soundings at 120 feet deep. It was explored by Dr. Wolf in 1885–1886.

KASSALA, a fortified town, formerly the capital of the Nubian district of

Taka, on a tributary of the Atbara, 260 miles S. of Suakim. It was formerly the most important commercial center between the Nile and Abyssinia. Pop. about 10,000.

KASSEL. See CASSEL.

KASSIMOV, capital of the district of Kassimov, Russia, located on the Oka river. A fair, which is held annually in July, attracts considerable trade to the town. The only manufactures of any importance are the tanneries. From 1400 to 1485 this city was the residence of the Tartar Khan Kassim. Pop. about 17,500.

KASTAMUNI (käs-tä-mö'nuh), capital of the vilayet of Kastamuni (area, 19,184 square miles; pop. about 1,000,000), in Asia Minor, 76 miles S. W. of Sinope. Manufactures cotton goods, leather, etc. Here is the ancestral castle of the Comneni. Pop. about 16,000.

KATAHDIN (-tä'-), the highest mountain in Maine, about 80 miles N. by W. of Bangor, and 6 miles N. E. of Penobscot river. Altitude 5,200 feet.

KATHIAWAR, a peninsula on the W. coast of India, between the Gulf of Cambay and the Gulf of Cutch; Brahmin and native name Surashtra. A British protectorate, governed by 200 native chiefs. Area of agency, 20,559 square miles; pop. about 2,500,000. The States of the agency supply one-sixth of the total quantity of cotton exported from Bombay.

KATMANDU, the capital of Nepal, stretching for about a mile N. from the confluence of the Baghmati and Vishnumati rivers. It contains a great number of temples, many in pagoda shape, with roofs of brass, and others domed; but the houses are in general mean, the court-yards filled with rubbish heaps, and the streets are narrow and filthy in the extreme. The principal building is the immense ugly palace of the Maharajah; close to its modern *darbár,* or reception room, is the large military council chamber, the Kót, where in 1846 most of the chief men of the state were massacred. Pop. about 80,000.

KATRINE, LOCH, one of the most celebrated of Scotch lakes, in Stirling and Perthshires, 5 miles E. of Loch Lomond and 9½ W. of Callander. Lying 364 feet above sea-level, it has a maximum depth of 468 feet, and an area of 3,119 acres, and since 1859 has supplied Glasgow with water. Here are the "Silver Strand" and Ellen's Isle, the chief scene of the "Lady of the Lake." Scott was often here during 1790–1809, as also was Wordsworth with his sister Dorothy in 1805.

KAT RIVER, a branch of the great Fish river, in Cape Colony, South Africa, rising in the Didimaberg, in the fertile valley of which a Hottentot settlement was formed in 1829. It was broken up after the rebellion of 1851–1852, and the valley now forms the district of Stockenstrom (after Captain Stockenstrom); area, 240 square miles; pop. about 7,000.

KATTEGAT. See CATTEGAT.

KATTIMUNDOO, or **KATTIMUNDU,** the milky juice of the plant *Euphorbia kattimundoo* or *Cattimandoo,* a small tree, with five-angled stems, a native of the East Indies. It resembles caoutchouc, and is used as a cement for metal, knife-handles, etc.

KATUNSKI (kä-tön'ski), or **KATUN, ALPS,** the highest range of the Altai Mountains; in Tomsk, Siberia.

KATYDID, a name applied to numerous American insects, nearly related to grasshoppers. They are arboreal in habit, and are well concealed in the foliage by their green color. The true katydid, abundant in the Central and Western States, is *Cyrtophyllus concavus,* but *Microcentrum retinervis* is yet commoner, and there are several other species.

KATZBACH (käts'bäh), a river of Prussia, in Silesia, rising at Katzchdorf, and falling into the Oder 30 miles N. W. of Breslau; length, 34 miles. On the banks of that river, Aug. 26, 1813, the French were defeated by Blücher.

KAUAI (kä-ö-ä'ē), a very fertile island of volcanic origin, belonging to the Hawaiian group; area 590 square miles; pop. 9,000. Its highest point is about 5,000 feet; principal industry sugar-planting. Captain Cook landed at the mouth of the Waumea river in 1778.

KAUFMANN, MARIA ANGELICA, a Swiss artist; born in Coire, Grisons, Switzerland, Oct. 30, 1741. She acquired the first principles of drawing and painting from her father. In 1766 she came to England, was patronized by the King and became famous. She married Zucchi, a Venetian painter. She died in Rome, Nov. 5, 1807.

KAULBACH, WILHELM VON (koul'bah), a German painter; born in Arolsen, Waldeck, 1805. He studied at Düsseldorf under Cornelius, whom he assisted in the execution of the frescoes

of the Glyptothek at Munich, and subsequently succeeded in the Munich Academy. He decorated the Odeon, the palaces of Maximilian and Ludwig, and the new Pinacothek. His most ambitious pictures, excepting "The Madhouse" (1828), are to be found in a series (utilized in the decoration of the Berlin Museum) comprising the "Tower of Babel," "Age of Homer," "Destruction of Jerusalem," "Battle of the Huns and Romans," the "Crusades," and the "Reformation" (1834–1863). He illustrated many books, including the "Reineke Fuchs," the "Gospels," and the works of Shakespeare, Goethe, and Schiller. He died in Munich, April 7, 1874.

KAUNITZ (kou'nits), **PRINCE WENZEL ANTON VON, COUNT OF RIETBERG**, an Austrian statesman; born in Vienna, Feb. 2, 1711. While minister to France (1750–1752), he succeeded in making an alliance between that country and Austria. From 1753 to 1792 he was state chancellor and chief minister and formed the coalition against Frederick the Great in 1756. He died June 27, 1794.

KAURI (kou'ri) **PINE**, or **KOWRIE** (*Dammara australis*), a species of dammar, a native of New Zealand. It is a tree of great size and beauty, attaining a height of 140 feet or more, with whorls of branches, the lower of which die off as it becomes old. The timber is white, close-grained, durable, flexible, and very valuable for masts, yards, and planks. The Fiji Islands, New Hebrides, and Australia produce other species. All of them are trees of dark, dense foliage, and produce a resin called Kauri resin, or Kauri gum, and sometimes Australian copal and Australian dammar, of which large quantities are exported from Auckland. *D. orientalis*, a native of the Moluccas, exudes a similar resin, which is at first white like crystal, and is called white dammar, but with age it assumes a yellow amber tint.

KAVA-KAVA, AVA-AVA, or **KAWA**, a small shrub, about six feet high, with stems 1 to 1½ inches thick, native of the South Sea Islands; sometimes called *Piper methysticum*. The rhizome is said to be valuable medicinally for certain diseases of the genito-urinary organs.

KAVERI (kâ've-ri), a river of Southern India, rising in the western Ghâts, and flowing S. E. across Mysore and Madras, to the Bay of Bengal, which it enters through two principal mouths; length, about 475 miles; drainage, about 28,000 square miles; flood discharge above the delta, 472,000 feet per second. The Kaveri is of no value for navigation, its bed being rocky, with numerous rapids and falls. It is of importance for irrigation in Mysore and in Coimbatore district, but especially in the marvelously fertile delta. For this purpose the main stream has been dammed since the 4th century A. D., the Coleroon (the N. branch) since 1838.

KAVI, or **KAWI** (kä'vē), the ancient sacred language of Java, with a vocabulary based chiefly on Sanskrit. The only place where it in any degree exists today uncorrupted by the ordinary Javanese, is the island of Bali.

KAYES, or **KHAYES** (kä-yās'), a town of the French Sudan, on the river Senegal, the terminus of the railway and river service from St. Louis; pop. between 6,000 and 7,000.

KAYE-SMITH, SHEILA, an English author. Her first book, "A Tramping Methodist," was published in 1908, and this was followed by "Starbrace" in the following year. Since then she has published a number of other books, among them: "Samuel Richardson"; "Isle of Thorns"; "Three Against the World"; "Willow's Forge and Other Poems"; "Sussex Gorse"; "The Challenge to Sirius"; "Little England"; "Tamarisk Town."

KAZAN (kä-zän'), a city of European Russia, capital of the province of the same name; on the Kasanka, about 4 miles above its junction with the Volga. It is strongly fortified, with large woolcombing, weaving and dyeing establishments, tanneries and soap works. The timber, flour, and hemp fairs of Kazan are of the largest in the Russian Empire. The university is a great seat for Oriental learning. Pop. about 200,000. KAZAN, the province, has an area of 24,587 square miles; domiciled pop. about 3,000,000. It is well watered by the Volga, the Kama, the Sura, the Viatka, the Kasanka; agriculture, cattle-raising, and fishing are the chief occupations.

KAZVIN (käz-vēn'), a town of Persia, 95 miles N. W. of Teheran, on the road to Resht. It manufactures brocade, velvet, cotton, and iron ware, and breeds camels and horses. Pop. 30,000 to 40,000.

KEAN, CHARLES JOHN, an English actor; son of Edmund Kean; born in Waterford, Ireland, Jan. 18, 1811. He was educated at Eton, but in 1827 he took to the stage, and made his début at Drury Lane as Young Norval. In 1830 he visited America, established his reputation, and reappeared as a leading actor

in London in 1838, among his parts being Hamlet and Richard III. He married the accomplished actress Ellen Tree in 1842, revisited the United States in 1845, and in 1851 became sole lessee of the Princess Theater, London, where he put some of Shakespeare's plays on the stage with a splendor never before attempted. In 1863 he made a tour to Australia, California, Jamaica, the United States, Canada, etc., which proved a great financial success. He died in London, England, Jan. 22, 1868.

KEAN, EDMUND, an English actor; born in London, Nov. 4, 1787. His parentage is doubtful, though Nance Carey, daughter of George Savile Carey, was his mother. Nance Carey being an actress, Kean from his infancy made occasional appearances on the stage, and when about 16 years old became a regular "stroller." After 10 years' painful experience he succeeded in obtaining an engagement at Drury Lane Theater, where he made his famous first appearance as Shylock, Jan. 26, 1814. His success was immediate, and he at once took rank as the first actor of the day, displacing even John Philip Kemble. A period of wonderful success followed; but Kean's irregularities were as great as his genius, and he gradually forfeited the public approval. An intrigue with the wife of Alderman Cox led to a lawsuit, and public disapproval of his conduct drove Kean from the stage. He went to America, and returned to England in 1826, a mere wreck in health. At last, March 25, 1833, he broke down hopelessly, while playing Othello to the Iago of his son Charles, and never acted again. Regarding Kean's genius as an actor there can be no question. He died in Richmond, May 15, 1833.

KEANE, LORD JOHN, a British military officer; born in Belmont, Ireland, in 1781. He entered the British army when a boy; served in Egypt, and in Spain during the Peninsular War, becoming a major-general; was superseded in the command of the British expedition against New Orleans in 1814 by Pakenham; was severely wounded at the battle of New Orleans. He died in Hampshire, England, Aug. 24, 1844.

KEARNEY, a city and county-seat of Buffalo co., Neb.; on a canal extending from the Platte river, which furnishes power for manufacturing, and on the Union Pacific and Burlington Route railroads; 198 miles S. W. of Omaha. It is the farming, stock-raising, and manufacturing trade center for the surrounding country; has a large cotton mill, electric flour mill, and machine shops; and is the seat of the Western State Normal School and the State Industrial School for Boys. Pop. (1910) 6,202; (1920) 7,702.

KEARNEY, DENIS, an American agitator; born in Oakmont, County Cork, Ireland, in 1847; followed the sea in 1858–1872; became foreman of a gang of stevedores in San Francisco in 1872, soon after starting in the draying business for himself; took an interest in politics. In 1877, owing to interference with his business, he began to excite the workingmen of San Francisco against capital, Chinese labor, etc., mass meetings being held in a suburb called the "Sandlots." The movement instigated by him finally succeeded in packing a convention and organizing a new constitution in its own interest for the State of California. In the summer of 1878 he visited and spoke throughout the East, attended by a private secretary, but failed to make much impression. He died April 24, 1907.

KEARNY, a town of New Jersey, in Hudson co. It is on the Passaic river, and on the Erie railroad. It is an attractive residential community and is a suburb of Newark, across the river. Its institutions include a State soldiers' home, a Roman Catholic protectory, a hospital, and an orphan asylum. Among its industries are manufactories of linoleum, cotton and linen thread, brass goods, dyestuffs, fertilizers, lamps, buttons, etc. Pop. (1910) 18,659; (1920) 26,724.

KEARNY, PHILIP, an American military officer; born in New York City, June 2, 1815. Though educated for the law, he, at the age of 22, entered the 1st United States Dragoons as 2d lieutenant, and was shortly afterward dispatched by the government to Europe, to study the French cavalry service. After entering the École Polytechnique, Paris, and serving as a volunteer in the ranks of the Chasseurs d'Afrique in an Algerian campaign, Kearny returned to the United States in 1840. From 1841 to 1844 he acted as aide to General Scott, and in 1846 became captain. Kearny served throughout the Mexican campaign, and was brevetted major for his distinguished gallantry at Contreras and Churubusco. On the termination of the war he commanded a force sent against the Indians of the Columbia river. In 1851, resigning his commission, he went to Europe, and served as volunteer aide-de-camp on the French staff throughout the Italian campaign of 1859, being present

at the battles of Magenta and Solferino. On the outbreak of the Civil War in 1861, Kearny hastened home, was appointed brigadier-general of volunteers in May, and exhibited his dashing courage in all the battles of the Chickahominy campaign. In 1862 (July 4) he was commissioned major-general, and was killed at Chantilly, Sept. 1, following.

KEARNY, STEPHEN WATTS, an American military officer; born in Newark, N. J., Aug. 30, 1794; left Columbia College to enter the American army as 1st lieutenant in the 13th United States Infantry, in March, 1812; distinguished himself at Queenstown Heights; promoted captain in April, 1813; after the war, was promoted through various grades, becoming brigadier-general in 1846. In the Mexican War, commanding the Army of the West, he conquered New Mexico; and establishing a provisional government at Santa Fé he proceeded to California, where, Dec. 6, 1846, he fought the battle of San Pascual, in which he was twice wounded. He took part in the battles of San Gabriel and Plains of Mesa, Jan. 8 and 9, 1847; was governor of California, March to June, 1847; governor of Vera Cruz, March, 1848; of the City of Mexico, May, 1848; brevetted major-general. He wrote "Manual for the Exercise and Manœuvering of United States Dragoons" (1837); "Organic Law"; "Laws for the Government of New Mexico" (1846). He died in St. Louis, Mo., Oct. 31, 1848.

KEARSARGE. (1) A mountain 3,250 feet high, situated in Carroll co., N. H.; (2) a mountain 2,950 feet high, in Merrimac co., N. H.

KEATS, JOHN, an English poet; born in London, England, Oct. 29, 1795; was apprenticed to a surgeon, but gave way to the ambition of becoming a poet. His first poems published in 1817 made no impression. "Endymion" (1818) and "Lamia" (1820) brought fame, though savagely treated by Clifford in the "Quarterly Review." Keats, already attacked by tuberculosis, sought to regain strength in Italy and died in Rome, Feb. 23, 1821.

KEBLE, JOHN, an English poet; born in Fairford, Gloucestershire, England, April 25, 1792. He was remarkable for great beauty of character. A clergyman of the English Church, he repeatedly refused rich livings from a sense of duty. His great work "The Christian Year" (2 vols., 1827), which he published anonymously, had an enormous circulation, and from the profits the author built one of the most beautiful parish churches in England. Died March 27, 1866.

KEBLE COLLEGE, one of the colleges of Oxford University, built by subscription as a memorial of the Rev. John Keble, and incorporated in 1870. The college is a flourishing institution, and has the patronage of about a dozen livings.

KEDGE, a small anchor used to keep a ship steady and clear from her bower anchor while she rides in a harbor or river, also used in warping her from one part of a harbor to another.

KEDRON, or **KIDRON**, spoken of as a "brook" in the English Bible. It is a gorge close to Jerusalem on the E., running away in the direction of the Dead Sea.

KEEL, in botany, (1) the two lower petals of a papilionaceous corolla which adhere by their margins so as somewhat to resemble the keel of a boat; called also carina. (2) The midrib of a leaf or petal, etc., elevated externally. As a nautical term, a low, flat-bottomed vessel used in the river Tyne; a coal-barge. In shipbuilding, the lower longitudinal beam of a vessel, answering to the spine, and from which the ribs proceed. In wooden vessels an additional timber beneath is called the false keel. A sliding keel is a board amidships working in a trunk in the line of the keel, and extending from the bottom to the deck. It is lowered to prevent a vessel's making leeway when sailing with a side wind. In zoölogy, a projecting ridge along any surface; as, for instance, the back or horns of an animal.

KEELEY, LESLIE E., an American physician; born in 1842; was graduated at Rush Medical College in 1864. He founded the Keeley Institute system for the cure of inebriety and the use of narcotics, commonly known as the gold or Keeley cure, and was president of the company which bears his name. He died in Los Angeles, Cal., Feb. 21, 1900.

KEEL-HAUL, or **KEEL-HALE**, to punish in the seamen's way by dragging the offender under water on one side of the ship and up again on the other by ropes attached to the yard-arms on either side. In small vessels the culprit is drawn under the craft from stem to stern.

KEELING, or **COCOS, ISLANDS**, a group of about 20 small coral atolls in the Indian Ocean, lat. 12° S., and about 500 miles S. W. of Java; pop. (1917) 819. They are covered with cocoanut

palms, whence oil is extracted; pigs and rats are the only mammals; there are no land birds but poultry. These islands were discovered by Captain Keeling in 1609 and were visited by Darwin in 1836; it was on his study of them that he based his subsidence theory of the formation of coral reefs. They were annexed to England in 1857.

KEEN, WILLIAM WILLIAMS, an American surgeon; born in Philadelphia, Pa., Jan. 19, 1837; was graduated at Brown University in 1859, and at Jefferson Medical College in 1862; assistant surgeon 5th Massachusetts regiment in 1861; acting assistant surgeon United States army, 1862–1864; studied in Europe 1864–1866; was head of the Philadelphia School of Anatomy 1866–1875; lecturer on pathological anatomy at Jefferson Medical College 1866–1875; Professor of Artistic Anatomy at the Pennsylvania Academy of Fine Arts 1876–1890; of surgery at the Women's Medical College 1884–1889, and of Surgery at Jefferson Medical College 1889. He paid special attention to the surgery of the nervous system; was a pioneer in cerebral surgery; in 1890 published experiments with the injection of filtered air for the determination of rupture of the bladder; in 1891 proposed relieving spasmodic wryneck by the exsection of the nerves supplying the posterior rotator muscles of the head. He wrote "Keen's Clinical Charts" (1870); "Early History of Practical Anatomy" (1870); etc. He edited "American Health Primers" (1879–1880); "Gray's Anatomy" (1887); "American Text Book of Surgery" (1899); etc. He received the degree of LL. D. from Brown University in 1892; became honorary fellow of the Royal College of Surgeons of England in 1900.

KEENE, city and county-seat of Cheshire co., N. H.; on the Ashuelot river and the Boston and Maine railroad; 50 miles S. W. of Concord, the State capital. It is the trade center for an important farming and manufacturing section; is surrounded by high hills, a part of the Monadnock mountains 10 miles distant; and contains the railway repair shops, public high school with full college preparatory course, Unitarian Invalids' Home, Elliot City Hospital, and several manufacturies of woolen and flannel goods, machinery, woodenware, etc. Pop. (1910) 10,068; (1920) 11,210.

KEENE, CHARLES SAMUEL, an English illustrator; born in Hornsey, near London, Aug. 10, 1823; was apprenticed at wood-engraving at the age of 19; worked for illustrated journals, especially "Punch" (1851-1891). He illustrated Charles Reade's "A Good Fight"; George Meredith's "Evan Harrington"; Douglas Jerrold's "Mrs. Caudle's Curtain Lectures"; and received a medal at the Paris Exposition of 1889. He died in London, Jan. 4, 1891.

KEENE, LAURA, an American actress; born in England, in 1820. She came to the United States in 1852. She was for a time manager of the Varieties Theater in New York, and 1855–1863 was the lessee of the Olympic, at first called "Laura Keene's Theater." She produced "Our American Cousin," with Jefferson and Sothern in the cast. It was while witnessing this play at Ford's Theater in Washington that President Lincoln was assassinated. She died in Montclair, N. J., Nov. 4, 1873.

KEEP, in castles of the old type, a kind of strong tower, to which the besieged retreated and made their last efforts of defense.

KEEVE, a large vessel or vat used: (1) For mashing, fermenting, or storing beer. (2) For holding a bleaching liquor or alkaline lye; same as keir. (3) For elevating ores; same as corf. (4) An iron-bound tub of a truncate, conical form, set on the smaller end, and used for collecting the fine grains of copper.

KEEWATIN (kē-wä'tin), a district of Canada, bounded on the S. by Manitoba from its N. E. corner to the W. shore of Lake Winnipeg; on the W. by the shore of the lake to near Norway House, whence the boundary goes in a N. direction to lat. 55°, at the point where it intersects the Nelson river, and then passes W. to the 100th degree of longitude, which it follows N. to the limits of Canadian territory; on the E. by a continuation of the E. boundary of Manitoba till it reaches Hudson Bay, where it follows the coast line to the N. limits of the Dominion; area, 756,000 square miles. It is administered by the lieutenant-governor of Manitoba, but is nearly uninhabited, excepting by Eskimos in the N. Hudson's Bay Company posts are the only settlements. The principal attraction is the game, large and small, with which it abounds. The country is well watered and timbered in many places, but is not suitable for cultivation to any extent. It embraces the N. part of Lake Winnipeg, with its important fisheries. The Nelson river passes through the province, as well as the Churchill. See HUDSON BAY.

KEFF, or **EL-KEFF**, a walled town of Tunis, 95 miles S. W. of the capital, on

the side of a steep hill. It was noted in Carthaginian times for its temple to Astarte. There exist a ruined temple, thermæ, and cisterns of Roman construction.

KEHL (kāl), a town of the former grand-duchy of Baden, immediately opposite Strasburg, and 10 miles N. W. of Offenburg. Kehl was formerly a fortress. It was ceded by France to Baden in 1697, taken by the French in 1703, 1733, 1793, and 1796; by the Austrians, also, in the latter, and again taken by the French in the year following. After the peace its fortifications were dismantled. Pop. about 5,000.

KEIGHLEY (kēth'li), a market and manufacturing town in the West Riding of Yorkshire, England, on the Aire, 9 miles N. W. of Bradford and 17 W. N. W. of Leeds. Manufactures worsted and woolen goods, worsted spinning machinery, and sewing and washing machines. Pop. (1917) 40,575.

KEI (kā) **RIVER, GREAT**, a river of South Africa, which in 1848 was made the boundary between Cape Town and Kaffraria.

KEISKAMA (kīs-kä'mä), a river in South Africa, formerly the boundary between Cape Colony and British Kaffraria.

KEITH, JAMES, known as MARSHAL KEITH, a Russian and Prussian military officer; born near Peterhead, Scotland, June 11, 1696. He studied law at Aberdeen and Edinburgh; in 1715 engaged with his brother in the Jacobite rising, and in 1719 in Alberoni's expedition to the West Highlands, which ended in the "battle" of Glenshiel, Ross-shire. Both times the brothers escaped to the Continent; and James held for nine years a Spanish colonelcy and took part in the siege of Gibraltar (1726-1727). But his creed, the Episcopal, was against him; and in 1728 he entered the Russian service as a major-general. He distinguished himself in the wars with Turkey and Sweden, particularly at the siege of Otchakoff (1737) and the reduction of the Aland Islands (1743). In 1747, finding the Russian service disagreeable, he exchanged it for that of Prussia. Frederick the Great made him a Field Marshal. He displayed his great ability when the Seven Years War (1756) broke out. He shared Frederick's doubtful fortunes before Prague, was present at the victories of Lobositz and Rossbach, and conducted the masterly retreat from Olmütz. He was killed at the battle of Hochkirch. Oct. 14, 1758.

KELANTAN, an eastern native state of Malay Peninsula, ruled by a native Sultan. The land is well cultivated and produces tapioca, rice, copra and resin. There is also considerable wealth of rubber. The mineral wealth of the state is largely in British hands. The manufactures include silk, bricks, and some shipbuilding. Capital, Kota Bharu. Pop. about 300,000.

KELÁT, KHELAT, or **KALAT** (kelät), the capital of Baluchistan, at an elevation of more than 7,000 feet; it is a place of great military importance. It was occupied by England (1839–1841); and in 1877 a treaty was concluded with the khan by which a British agent, with military escort, became resident at the court of Kelát. In 1888 Kelát was formally incorporated with the Indian empire as a British possession. Pop. about 25,000.

KELAT-I-GHILZAI, a fortress of Afghanistan, 75 miles N. E. of Kandahar.

KELLAWAYS ROCK, the name given to highly fossiliferous beds of sand and calcareous sandstones which occur near the base of the Oxford clay.

KELLER, GOTTFRIED, a German poet and novelist; born in Zürich, July 19, 1819. Original in execution, he was a keen observer, genuinely artistic, and with a strong sense of humor. In his best vein he goes straight to the heart. His works include "Complete Poems" (3d ed. 1888). Of his novels, "Seldwyla Folk" (1856) is one of the best. ("Works," 11 vols., 1889–1893.) He died in Zürich, July 16, 1890.

KELLER, HELEN ADAMS, an American writer and lecturer; born in 1880 in Tuscumbia, Ala. She was deaf, dumb and blind from her infancy. No serious attempt was made to educate her until she was eight years of age. Her training was then undertaken by Miss Anne M. Sullivan, who devoted many years to developing the power to read and to speak. Her success was remarkable. After a course of instruction at the Horace Mann School in New York, she was able to speak intelligently. She entered Radcliffe College in 1900 and graduated in 1904. She became widely known as a lecturer and writer, both on her own experiences and on social subjects. Her writings include "Optimism" (1903); "The World I Live In" (1908); "Out of the Dark" (1913). She also wrote an autobiography entitled "Story of my Life."

KELLERMANN, FRANÇOIS CHRISTOPHE, a marshal of France; born in

Strassburg in 1735. He gained great distinction in the Seven Years' War, during which he rose to the rank of brigadier. On the breaking out of the Revolution, he was given the command of the army of the Moselle or the North, and in 1792 gained the splendid victory of Valmy over the Prussians, and in 1795 had com-

HELEN KELLER

mand of the armies of Italy and the Alps. The ascending star of Napoleon superseded Kellermann as an independent commander, though his services were acknowledged by a marshal's baton in 1804 and the title of Duke of Valmy. He died in 1820.

KELLEY, HOWARD G., a Canadian railroad president. He was born in Philadelphia in 1858 and graduated from the Polytechnic College, Pennsylvania. He entered railroad service in 1881, becoming engineer on location bridge construction and harbor work. He had charge of the field construction of 250 miles on West and Pacific divisions in Washington, Idaho and Montana of the Northern Pacific railway till 1884. He was superintendent of mines in Montana, 1884-1887, and engineer with St. Louis Southwestern railroad 1887-1898. He was connected with other railroad systems as consulting and chief engineer, and in 1917 became president of the Grand Trunk railway system, president also of Grand Trunk Pacific railway, and chairman of the board of the Central Vermont railway.

KELLOGG, CLARA LOUISE, an American opera singer; born in Sumterville, S. C., July 12, 1842. She obtained her musical education in New York City, and London. Her first appearance in opera was in 1861 at the Academy of Music in New York City as Gilda in "Rigoletto." From that time on she held an enviable place in the affections of the American public and was also most cordially received in England. Her voice was a pure and flexible soprano and her execution brilliant. She had an extensive repertoire, including 45 operas. In 1887 she was married to Carl Strakosch and retired to private life. Published "Memoirs of an American Prima Donna" (1913). Died in 1916.

KELLOGG, FRANK BILLINGS, United States Senator from Minnesota; born in Potsdam, N. Y., in 1856. In 1865 he removed with his parents to Minnesota, where he received a common school education. He studied law and was admitted to the bar in 1877. He served as city attorney for Rochester, Minn., and as county attorney. In 1887 he removed to St. Paul. He was special counsel for the United States against the paper and Standard Oil trusts. He was also counsel for the United States in the cases against the Union Pacific and Southern Pacific railroads, and for the Interstate Commerce Commission in the investigation of the Harriman railroads. He was elected United States Senator from Minnesota in 1917. He took an active part in the discussion of the League of Nations Covenant and the Treaty of Peace in the Senate, and was an advocate of "mild reservations." He was mentioned as a possible Republican candidate for the presidency in 1920.

KELLOGG, VERNON LYMAN, an American geologist and public official; born at Emporia, Kan., in 1867. He graduated from the University of Kansas in 1889. He took post-graduate courses at Cornell and in France and Germany. After occupying various chairs in the University of Kansas, he was appointed professor of entomology and lecturer on bionomics at Leland Stanford Jr. University in 1894. He was the author of many works on zoölogical subjects. Among these are "Evolution and Animal Life" (1907); "The Animals and Man" (1911); "Beyond War" (1912). In 1915 and 1916 he was in charge of food distribution in Belgium and northern France for the American Commission for Relief in Belgium. In 1916 he was appointed assistant to the United States food administrator.

KELLS (originally Kenlis), an ancient town of County Meath, Ireland; on the Blackwater, 26 miles W. of Drogheda.

It has several interesting antiquities, including St. Columba's house. Kells was made the center of a bishop's see in 807. A manuscript copy of the gospels, called the "Book of Kells," with colored Celtic ornamentation, and believed to be the work of the 9th century, is now preserved in the library of Trinity College, Dublin.

KELMAN, JOHN, a Scotch clergyman. He was born in 1864 and was educated at the Royal High School, New College, Edinburgh, and Ormond College, Melbourne. In 1890 he became assistant to the Rev. G. A. Smith in Aberdeen, ordained in 1891, minister of New North Church, Edinburgh, 1897-1907, later pastor Fifth Avenue Presbyterian Church, New York. His works include: "The Holy Land"; "Faith of Robert Louis Stevenson"; "The Light That Saves"; "Courts of the Temple"; "Salted with Fire."

KELOID, or CHELOID, in pathology, an unsightly excrescence arising on the sternum or elsewhere, generally from the over-active growth of a cicatrix over a wound.

KELP, the calcined ashes of seaweed, from which carbonate of soda is obtained. From the alkali of kelp the important chemical substance called IODINE (*q. v.*) is obtained. Also the sea-wrack or sea-weed from which kelp is produced.

KELPIE, or KELPY, a sort of mischievous spirit, said to haunt fords and ferries at night, especially in storms. They generally appear in the form of a horse.

KELSEY BEDS, a subdivision of the Pleistocene accumulations, consisting chiefly of gravel, charged with marine shells and remains of mammoth, rhinoceros, etc., which occurs at Kelsey Hill near Hedon, and other places in the neighborhood of Hull, England.

KELSO, a market-town of Roxburghshire, England. It stands on the N. bank of the Tweed, here joined by the Teviot, and spanned by Rennie's noble five-arch bridge (1803). In 1126 David I. translated to "Calchou" a Tironensian abbey, founded by him at Selkirk, 13 years before. This, wrecked by the English under Hertford in 1545, is now represented by the stately ruins of its cruciform church. Across the river, on the peninsula formed by the Teviot, stood the royal castle and town of Roxburgh, demolished in 1460. Pop. about 4,000.

KELUNG, a town and seaport in the N. part of Formosa. It was opened to foreign commerce in 1863. Coal fields are worked by Chinese in the neighborhood, and large quantities of coal are exported. There is also an extensive export trade in rice, sugar, and camphor. Pop. 70,000.

KELVIN, LORD. See THOMSON, SIR WILLIAM.

KEMBLE, CHARLES, an English actor; brother of John Philip Kemble; born in Brecknock, Wales, Nov. 25, 1775. He was educated at Douay (France). In 1794 he made his first appearance at Drury Lane. His success was largely due to his representations of such characters as Edgar, Romeo, Charles Surface, Antony, etc. He was appointed censor of plays in 1840, when he retired from the stage. He had married the favorite actress Miss de Camp in 1806. He was the father of John Mitchell Kemble, Frances Anne Kemble. and Adelaide Kemble. He died in London, Nov. 12, 1854.

KEMBLE, FRANCES ANNE, popularly known as FANNY KEMBLE, an Anglo-American writer and actress; eldest daughter of Charles Kemble, and niece of Mrs. Siddons; born in London, England, Nov. 27, 1809. Her father being in financial difficulties she was induced to appear on the stage in 1829 at Covent Garden as Juliet, and her success was so great that in the course of three years she managed to relieve the fallen fortunes of the family. Her trip to America in company with her father was also a splendid triumph; while there she contracted an unfortunate marriage (1834) which was annulled by divorce 15 years afterward. She lived for many years in Lenox (Mass.). She wrote: "Francis I."; "Journal of a Residence in the United States"; "Journal of a Residence on a Georgia Plantation"; "Records of a Girlhood"; "Records of Later Life." As an actress she excelled in the characters of Portia, Beatrice, Lady Macbeth, Lady Teazle, and of Julia in the "Hunchback." She died in London, England, Jan. 16, 1893.

KEMBLE, JOHN PHILIP, an English tragedian; born in Prescot, near Liverpool, England, Feb. 1, 1757. He was eldest son of Roger Kemble, manager of a provincial theatrical company. Being intended for the Church he was sent to the Roman Catholic college of Douay (France). In spite of his parents' opposition he selected the stage as a professon, made his first appearance at Drury Lane in 1783, and became at once popular. He was afterward man-

ager of this theater in 1788–1802. From 1801 to 1803 he made a most successful tour of France and Spain, and on his return to London purchased a share in the Covent Garden Theater, and made himself a splendid reputation in the characters of Julius Cæsar, Hamlet, Macbeth, Coriolanus, etc. He abandoned the stage in 1817. His statue was placed in Westminster Abbey in 1833. His sister, Sarah, was the celebrated Mrs. Siddons. He died in Lausanne, Switzerland, Feb. 26, 1823.

KEMMEL, MOUNT, an elevation 500 feet high, wooded upon the side, N. W. of Bailleul which figured prominently in the Battle of the Lys, April and May, 1918. The hill overlooked a wide range of country, and on April 17 the Germans attacked it heavily, continuing the attack for several days. On April 25 they renewed the attack in force from a point N. of Bailleul, pushing back the Allied line along its whole front and taking many prisoners, and seizing the hill at nine o'clock. The British and French made great efforts to recapture the hill, but the Germans continued to hold it.

KEMP, SIR ALBERT EDWARD, a Canadian statesman. He was born at Clarenceville, Quebec, in 1858, and was educated at the Lacolle Academy. He is director of the National Trust Co. and Imperial Life Assurance Co., Toronto, and has been president of the Canadian Manufacturers' Association and Toronto Board of Trade. In 1900-1908 and since 1911 he has had a seat in the Canadian House of Commons. He was chairman of the War Purchasing Commission and has been Minister of Militia since 1916.

KEMPIS, THOMAS À (kem'pis), a German mystic; born in Kempen (whence his name, "Thomas from Kempen"), near Cologne, in 1380. His true name was Hamerken (Latin, Malleolus). Sub-prior of the monastery of Mount St. Agnes, near Zwolle, he was distinguished for piety and success as an instructor of youth. He was author of the "Imitation of Christ," one of the most famous of books. It is said that it has been translated into more languages than any other book except the Bible. He died in 1471.

KEMPTON PARK, in Middlesex, England, 4 miles W. of Kingston-on-Thames, once a royal residence, now noted for its race meetings.

KEN, or KIUN, an Egyptian goddess similar to the Roman Venus; she is represented as standing on a lion, and holding two serpents in one hand and a flower in the other.

KEN, THOMAS, an English prelate; born in Little Berkhampstead, Hertfordshire, England, in July, 1637. After studying at Oxford he became successively chaplain to the Princess of Orange, to the Earl of Dartmouth, and in 1684 to Charles II., who made him Bishop of Bath and Wells. In 1688 he was sent to the tower for resisting the dispensing power claimed by James II. He refused to take the oath of allegiance to William of Orange, and was dispossessed of his see; but Queen Anne granted him a pension. His morning and evening hymns are still cherished in many households. He died in Longleat, Wiltshire, March 19, 1711.

KENDAL, or KIRBY KENDAL, a market-town of Westmoreland, England, on the Kent, 22 miles N. of Lancaster. It has an ancient Gothic church, and a ruined castle (the birthplace of Catharine Parr). The industries include heavy textile fabrics, such as horse-cloths and railway rugs, besides leather, snuff, paper, etc. Pop. (1918) 14,033.

KENDAL, MRS. (MADGE GRIMSTON), an English actress; born in Cleethorpes, Lincolnshire, England, March 15, 1849. She was known on the stage as Madge Robertson and made her first appearance in London, as Ophelia, in 1865. She soon gained a reputation as an excellent actress of high comedy. On her marriage to W. H. Grimston in 1869 she assumed with him the stage name of Kendal. Mr. and Mrs. Kendal nade several successful visits to America after 1889. Mrs. Kendal was a sister of the dramatist T. W. Robertson. Retired in 1908.

KENDAL, WILLIAM HUNTER, stage name of an English actor, William H. Grimston, born in London, Dec. 16, 1843. After his marriage to Madge Roberston (Aug. 7, 1869) he played leading parts with her. He commenced his career on the stage at Glasgow in 1862. Made his first appearance in London at the Haymarket Theater in 1866, in "A Dangerous Friend"; thence to Court Theater for a couple of seasons; from there to Old Prince of Wales Theater for "Diplomacy," "London Assurance"; back to Court Theater for a season; then became lessee and manager, in partnership with John Hare, of St. James's Theater (1879–1888). Toured with Mrs. Kendal in the United States and Canada, 1889–1895. Died 1917.

KENDRICK, JOHN BENJAMIN, United States Senator from Wyoming, born in Cherokee co., Tex., in 1857. He was educated in the public schools and

in 1885 entered the cattle business. He became one of the largest ranch men and cattle raisers of the west. He served in the Wyoming Senate from 1910 to 1914 and in 1915 was elected Governor of Wyoming. In the following year he was nominated at the primaries for United States Senator and was elected Senator in 1917. In the same year he resigned as Governor. He was a Democrat in politics.

KENESAW MOUNTAIN, a mountain in Georgia 25 miles N. W. of Atlanta. It is famous as the scene of a battle in the Civil War between the Union troops under Sherman, and the Confederates under Johnston, which took place in June, 1864, and resulted in the repulse of Sherman with a loss of 3,000 men.

KENIA, MOUNT, an isolated mountain mass in Eastern Africa, about 10′ S. of the equator, and not far N. of Kilima-Njaro nearly in the center of British East Africa. It is also known as Doenyo Ebor, or White Mountain, because its summit is covered with perpetual snow. The crater wall rises up to a height of 16,000 feet, but the loftiest pinnacle towers up 3,000 feet higher.

KENILWORTH, a market-town of Warwickshire, England, on a small subaffluent of the Avon. The castle, founded about 1120 by Geoffrey de Clinton, was defended for six months (1265–1266) by Simon de Montfort's son, and passed by marriage (1359) to John of Gaunt, and so to his son, Henry IV. It continued a crown possession till in 1563 Elizabeth conferred it on Leicester. Dismantled by the Roundheads, the castle has belonged since the Restoration to the Earls of Clarendon. Its noble ruins comprise "Cæsar's Tower," the original Norman keep; Mervyn's Tower and the Great Hall, both built by John of Gaunt. Tanning is the chief industry. Pop. about 6,000.

KENLIS. See KELLS.

KENNAN, GEORGE, an American traveler; born in Norwalk, O., Feb. 16, 1845. In early life, and before the completion of the Atlantic cable, he was a member of the Western Union telegraph expedition to survey a route for a Bering Strait and Siberian telegraph line to Europe. The result of this expedition was the book called "Tent Life in Siberia" (1870). His journeys through Northern Russia and Siberia in the years 1885–1886 for the purpose of investigating the condition of the Siberian exiles, resulted in the publication of "Siberia and the Exile System" (1891). He was expelled from Russia in 1901. He explored Mount Pelée, Martinique (1902). Correspondent Russo-Japanese War (1904). Published "A Russian Comedy of Errors" (1915).

KENNAQUHAIR, Scotch for "Don't-know-where," equivalent to the German Weissnichtwo, nowhere; a fabulous place.

KENNEBEC, a river of Maine, rises in Moosehead Lake, in the W. of the State, and, passing Augusta, runs generally S. to the Atlantic Ocean. Its length is over 150 miles. It is navigable for large vessels to Bath, 12 miles, and for steamers beyond Augusta. In its course it falls 1,000 feet, affording abundant water power. Except for a few miles from its mouth, the river is closed by ice for from three to four months in the year; and many companies are engaged in harvesting and storing the ice.

KENNEDY, CHARLES RANN, a dramatist, born at Derby, England, in 1871. He was in turn office boy and clerk, lecturer and writer, up to the age of 26. He then went on the stage and wrote plays, articles, and poems. From 1905 he was engaged in dramatic writing. His first great success was made with "The Servant in the House" produced in 1908. This was followed by "The Winterfeast" (1908); "The Terrible Meek" (1911); "The Idol-Breaker" (1914); "The Army with Banners" (1917); "The Fool from the Hills" (1919). He married Edith Wynne Matthison in 1898.

KENNETH, the name of two Kings of Scotland, who reigned in the dark ages of that country's history. KENNETH I. (McAlpin) was the son of Alpin, who was slain by the Picts in 832 or 834. Kenneth died in 860 or 862, after a long and successful war waged with the Picts. KENNETH II. ascended the throne on the death of his father, Malcolm, and was murdered by his soldiers and the populace in 994.

KENOSHA, a city and county-seat of Kenosha co., Wis.; on Lake Michigan and the Chicago and Northwestern railroad; 35 miles S. of Milwaukee. It is a trade center for the county and a popular health and summer resort; is principally engaged in dairying, farming, and the manufacture of flour, leather, furniture, and carriages and wagons; and contains the University School (nonsect.); Kemper Hall School (P. E.), high school, public library, and a system of waterworks supplied from the lake and artesian wells. Kenosha has

passenger and freight steamer communication with ports on the Great Lakes. Pop. (1910) 21,371; (1920) 40,472;

KENRICK, PETER RICHARD, an American clergyman; born in Dublin, Ireland, Aug. 17, 1806; ordained priest in the Roman Catholic Church in 1830; came to the United States in 1833; appointed coadjutor to Bishop Rosati, of St. Louis, in 1841, and succeeded to that bishopric in 1843; was created first archbishop of St. Louis in 1847. His publications include "The Holy House of Loretto"; "Anglican Ordinations"; "Vaticana"; etc. He died in St. Louis, Mo., March 4, 1896.

KENSAL GREEN, a cemetery on the N. W. of London, 77 acres in extent; consecrated in November, 1832. Here many of the illustrious sons of England have been buried, as Thackeray, Leigh Hunt, Sydney Smith, Buckle, Sir Charles Eastlake, John Leech, Sir John Ross, Brunel, Mulready, Kemble, Dibdin, Tom Hood, Balfe, Liston, Charles Mathews, Madame Vestris, Tietjens, Wilkie Collins, the Duke of Sussex, and his sister, the Princess Sophia.

KENSINGTON, a district in the W. of London adjoining Westminster, within which are Kensington Palace and Gardens.

South Kensington Museum was at first a temporary edifice of iron and wood (popularly known as "the Brompton Boilers"). It was opened in 1857, and to it were removed various collections which had since 1852 been exhibited in Marlborough House. This edifice has been superseded by permanent buildings. The institution comprises (1) the Art Museum, (2) the India Museum, (3) various science collections.

KENT, DUKE OF, 4th son of George III., and father of Queen Victoria; born in Buckingham Palace, London, Nov. 2, 1767; married Victoria Mary Louisa, May 28, 1818; died in Sidmouth, Devonshire, England, Jan. 23, 1820. See VICTORIA.

KENT, JACOB FORD, an American military officer, born in Philadelphia in 1835. He was educated in private schools and at Mount Pleasant Military Academy and at the United States Military Academy, from which he graduated in 1861. He served throughout the Civil War, rising to the rank of captain. He was promoted to various grades and in 1898 was made major-general of volunteers. He served through the Spanish-American War with great distinction. He was honorably discharged from volunteer and regular service in 1898. He died Dec. 22, 1918.

KENT, JAMES, an American jurist; born in Philippi, N. Y., July 31, 1763. Author of the famous "Commentaries on American Law" (4 vols. 1826–1830), which holds in this country a position similar to that occupied by Blackstone's "Commentaries" in Great Britain. It contains not only federal jurisprudence, but the municipal law written and unwritten of the several States. He was chief-justice and chancellor of the State of New York. He died in New York, Dec. 12, 1847.

KENTISH GLORY, a beautiful moth, orange-brown with black and white markings, the expansion of the wings about two and a half inches. The larva, which is not hairy, is whitish-green, feeding on birch in July and August; the perfect insect appears in April.

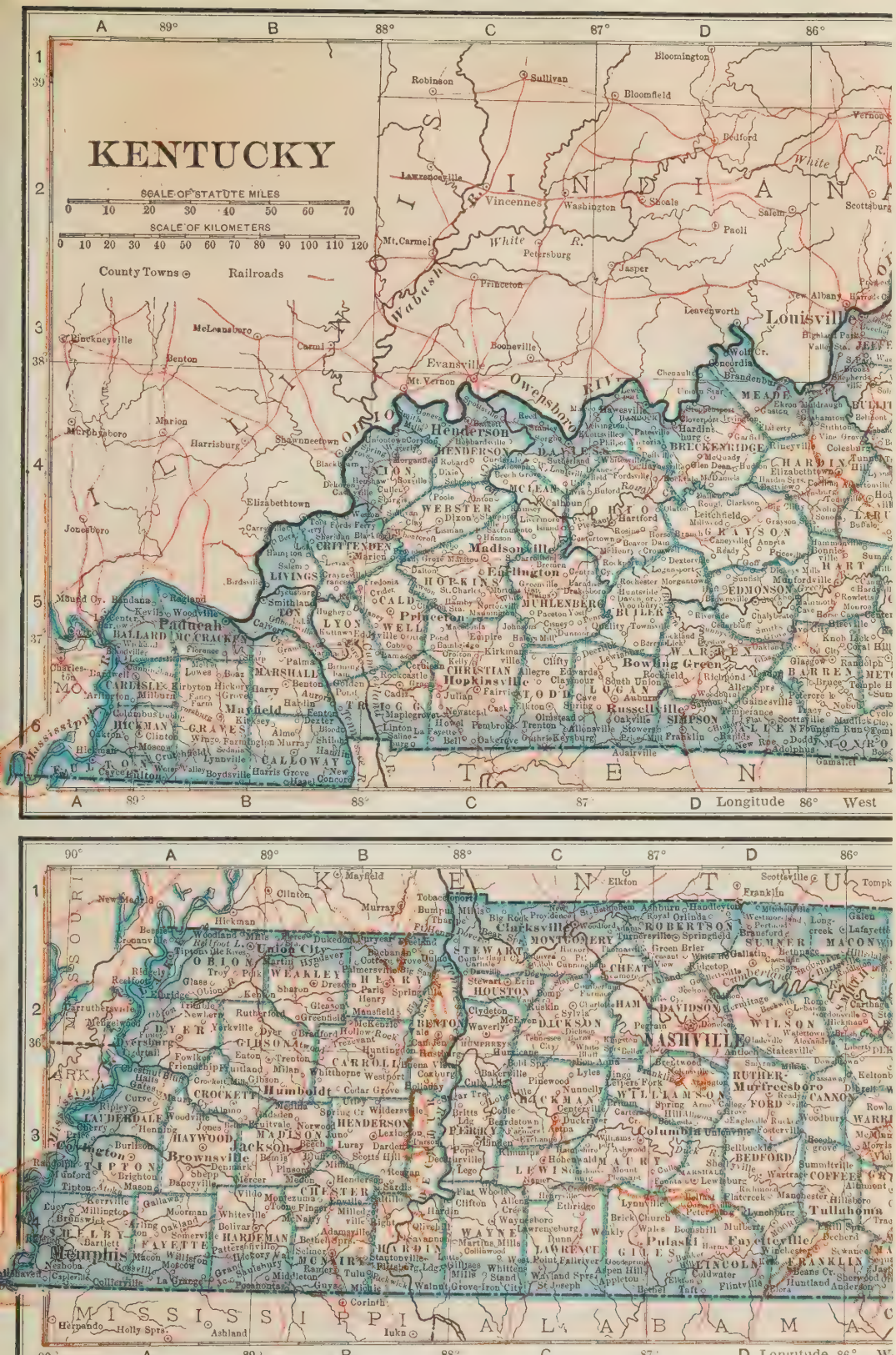
KENTISH RAG, a calcareous rock belonging to the Lower Cretaceous series. In the S. E. of England it is 60 or 80 feet thick. It is of marine origin. It was in a quarry of Kentish rag at Maidstone that the great *Iguanodon mantelli* was discovered.

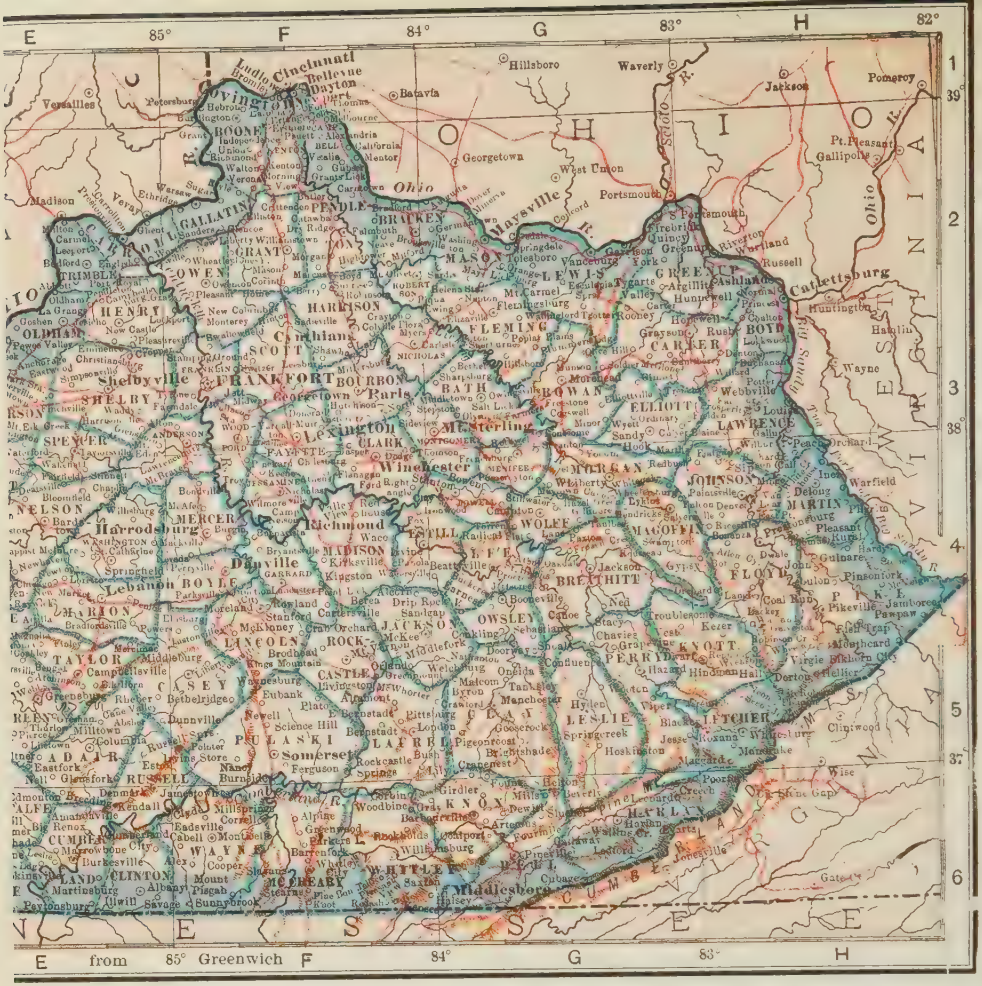
KENT ISLAND, an island some 15 miles long in Chesapeake Bay, Md., 7 miles E. of Annapolis. It was here the first settlement in Maryland was made by William Claiborne in 1631.

KENTON, a city in Ohio, the county seat of Hardin co. It is on the Scioto river and on the Toledo and Ohio Central, the Cleveland, Cincinnati, Chicago and St. Louis, and the Erie railroads. It is the center of an important farming and lumbering region and its industries include the manufacture of iron, hardware, tools, etc. It has a court house, city buildings, a public library, and an armory. Pop. (1910) 7,185; (1920) 7,690.

KENTUCKY, a river of Kentucky, formed by two forks which rise in the Cumberland Mountains, and, after a winding N. W. course of about 250 miles, enters the Ohio, 12 miles above Madison, Ind. The river runs through part of its course between perpendicular limestone walls. It is navigable by steamboat beyond Frankfort.

KENTUCKY, a State in the South Central Division of the North American Union; bounded by Illinois, Indiana, Ohio, West Virginia, Virginia, Tennessee, and Missouri; area, 40,000 square miles; admitted to the Union, June 1, 1792; number of counties, 119; pop.


KENTUCKY
SCALE OF STATUTE MILES
0 10 20 30 40 50 60 70
SCALE OF KILOMETERS
0 10 20 30 40 50 60 70 80 90 100 110 120
County Towns
Railroads
Louisville
Bowling Green
Paducah
Henderson
Madisonville
Princeton
Hopkinsville
Owensboro
Russellville
Elizabethtown
Nashville
Humboldt
Jackson
Brownsville
Memphis
Corinth
Tuka
Longitude
West


E 85° F 84° G 83° H 82°
Cincinnati
Hillsboro
Waverly
Jackson
Pomeroy
Maysville
Portsmouth
Ashland
Catlettsburg
Huntington
Pt. Pleasant
Gallipolis
Georgetown
West Union
Versailles
Frankfort
Lexington
Winchester
Richmond
Harrodsburg
Danville
Lebanon
Somerset
Middlesboro
Williamsburg
Pineville
Cumberland Gap
Harrisburg
Shelbyville
Paris
Mt. Sterling
Morehead
Grayson
Wayne
Warfield
Pikeville
Hazard
Jackson
Irvine
Barbourville
London
Corbin
Manchester
Hyden
Whitesburg
Clintwood
Wise
Gate City
Abingdon
Bristol
Johnson City
Kingsport
Elizabethton
Greeneville
Morristown
Rogersville
Rutledge
Tazewell
Jonesville
Gate City
Arcadia
Sutherland
Burnsville
Marshall
Asheville
Bakersville
Mt. Mitchell
Big Yellow Mt.
Buck Mts.
Roan Mt.
Unaka Mts.
Smoky Mts.
Great Smoky Mts.
Clingmans Dome
Max Patch
Pigeon R.
French Broad R.
Nolichucky R.
Watauga R.
Holston R.
Clinch R.
Powell R.
Cumberland R.
Big Sandy R.
Kentucky R.
Licking R.
Scioto R.
Ohio R.
Tennessee R.
Cumberland Mts.
Cumberland Plateau
Pine Mts.
Log Mts.
Black Mts.
Harlan
Middlesboro
Cumberland Gap
Knoxville
Rockwood
Harriman
Oak Ridge
Clinton
Maryville
Sevierville
Pigeon Forge
Gatlinburg
Newport
Dandridge
Jefferson City
Morristown
Greeneville
Johnson City
Kingsport
Bristol
Elizabethton
Erwin
Unicoi
Cleveland
Athens
Madisonville
Sweetwater
Loudon
Lenoir City
Kingston
Harriman
Rockwood
Oliver Springs
Wartburg
Jamestown
Crossville
Cookeville
Livingston
Celina
Carthage
Lebanon
Gallatin
Hartsville
Springfield
Clarksville
Dover
Fort Donelson
Paris
Huntingdon
Dyersburg
Union City
Tiptonville
Reelfoot Lake
Obion R.
Forked Deer R.
Hatchie R.
Wolf R.
Loosahatchie R.
Memphis
Arlington
Collierville
Germantown
Bartlett
Millington
Covington
Brownsville
Jackson
Humboldt
Trenton
Milan
Martin
Union City
Dyersburg
Halls
Ripley
Somerville
Bolivar
Henderson
Lexington
Huntingdon
Parsons
Waverly
Dickson
Ashland City
Nashville
Franklin
Columbia
Lawrenceburg
Pulaski
Fayetteville
Shelbyville
Murfreesboro
Lebanon
Gallatin
Hendersonville
Portland
Tullahoma
Manchester
McMinnville
Sparta
Cookeville
Crossville
Oneida
Huntsville
Jamestown
Wartburg
Oak Ridge
Clinton
Norris
Norris Dam
Norris Lake
Cumberland Gap
Middlesboro
Harlan
Pineville
Williamsburg
Somerset
Monticello
Albany
Burkesville
Glasgow
Bowling Green
Franklin
Scottsville
Adairville
Russellville
Hopkinsville
Guthrie
Clarksville
Springfield
Lebanon
Gallatin
Hartsville
Cookeville
Livingston
Celina
Carthage
Lebanon
Nashville
Ashland City
Dickson
Waverly
Huntingdon
Parsons
Henderson
Lexington
Somerville
Bolivar
Ripley
Halls

(1890) 1,858,635; (1900) 2,147,174; (1910) 2,289,905; (1920) 2,416,630; capital, Frankfort.

Topography.—The surface of the State is in general a plateau, sloping from the mountains in the E. to the rivers on the N. and N. W. The mountains in the S. E., the Cumberland and the Pine, run parallel and include the valley of the Cumberland river. This valley is 75 miles in length, 15 miles in width and has an elevation of 1,000 to 1,500 feet above sea-level. The mountain peaks bounding the valley often reach a height of 2,500 feet and give it more picturesque beauty than in any other part of the Appalachian system. The Mississippi, Ohio, and Big Sandy rivers form over one-half the boundary line of Kentucky, and besides these the Licking, Kentucky, Salt, and Green lie entirely within the State. The Tennessee and Cumberland rivers rise in Virginia and Kentucky respectively, the Tennessee running through Tennessee and Alabama, and the Cumberland through Tennessee alone, enter the State and cross it in parallel courses and empty into the Ohio within 15 miles of each other. These rivers are all navigable.

Geology.—The principal geological formations of the State are the Upper and Lower Silurian, Devonian, and sub-Carboniferous, with extensive coal measures. The entire State was at one time a great Lower Silurian lake, which has been pushed up by some subterranean force to a position 5,000 feet above that which it originally occupied. The sub-Carboniferous limestone areas in the Green river region, contain numerous gigantic caverns, of which MAMMOTH CAVE (*q. v.*) is the largest.

Mineral Production.—The chief mineral production of the State is coal. In 1919 there were produced about 25,500,000 tons. The production of petroleum in 1918 was 4,367,768 barrels, valued at $11,286,162. Other products are clay products and fluorspar.

Soil.—The soil is as a rule exceedingly rich and fertile, especially in that part known as the Blue Grass section, an area of over 10,000 square miles. The fertility of this region is due to the constant decay of a rich sub-stratum of lower Silurian limestone. It is said that there are not over 200 square miles of irreclaimable land in the entire State. There are quite extensive forests in the mountain regions. The principal trees are the ash, elm, pine, tulip, hickory, sweet gum, black walnut, maple, oak, honey locust, cottonwood, pecan, catalpa, cypress, apple, and beech.

Agriculture.—The great fertility of the river bottoms and the Blue Grass section makes Kentucky one of the foremost agricultural States in the Union. In 1919, the acreage, production and value of the leading agricultural products were as follows: corn, 3,300,000 acres, production 82,500,000 bushels, value $127,875,000; oats, 440,000 acres, production 9,900,000 bushels, value $9,009,000; wheat, 1,046,000 acres, production 12,029,000 bushels, value $25,381,000; tobacco, 550,000 acres, production 456,500,000 pounds, value $174,380,000; hay, 1,115,000 acres, production 1,561,000 tons, value $39,649,000; potatoes, 72,000 acres, production 5,040,000 bushels, value $10,584,00.

Manufactures.—In 1914 there were 4,184 manufacturing establishments in the State, employing 64,586 wage earners. The capital invested amounted to $193,423,000, the wages paid were $31,830,000, the value of the materials used was $114,829,000, and the value of the finished product was $230,249,000.

Transportation.—The total railway mileage in the State in 1919, was 4,118. About 50 miles were constructed during the year.

The principal industries were in connection with tobacco, liquors, flour and grist mill products, lumber and timber products, iron and steel, slaughtering and meat packing, and foundry and machine-shop products.

Banking.—On Oct. 31, 1919, there were 125 National banks in operation. There were also 426 State banks, with $15,155,000 capital, and $7,891,000 surplus; and 20 trust and loan companies, with $4,551,000 capital and $1,348,000 surplus. In the year ending Sept. 30, 1920, the exchanges at the United States clearing house at Louisville aggregated $993,855,000.

Education.—The total school population of the State is about 560,000, and the enrollment in the elementary schools in the various sub-districts is about 356,000 white, and about 35,000 colored. The average daily attendance is about 280,000 white and about 25,000 colored. There are about 3,600 male white teachers, and about 5,000 female. The average monthly salary for white teachers is about $45.00, and for colored teachers, about $43.00. The total expenditure for the year for school purposes is about $8,500,000.

Charities and Corrections.—The State institutions which are governed by the State board of control include the Reformatory at Frankfort; penitentiary, at Eddyville; houses of reform, at Greendale; Eastern Hospital, at Lexington;

Central Hospital, at Lakeland; Western Hospital, at Hopkinsville; and the Feeble-minded Institute, at Frankfort. Among the colleges and universities the most noted are Central University at Richmond, Berea College at Berea, Kentucky University at Lexington, Georgetown College at Georgetown, Center College at Danville, and the Agricultural and Mechanical College of Kentucky at Lexington. Among the women's colleges are Potter College at Bowling Green, Hamilton Female College at Lexington, Caldwell College at Danville, and Jessamine Female Institute at Nicholasville.

Churches.—The strongest denominations in the State are the Regular Baptist, S.; Roman Catholic; Methodist Episcopal, S.; Disciples of Christ; Regular Baptist, colored; Methodist Episcopal; African Methodist; and Presbyterian, S.

State Government.—The governor is elected for a term of four years. Legislative sessions are held biennially, and are limited to 60 days each. The Legislature has 38 members in the Senate and 100 in the House. There are 11 representatives in Congress.

History.—With the earliest history of Kentucky is associated the name of Daniel Boone, whose exploits in hunting and Indian fighting in the then distant and unexplored wilderness dates as far back as 1769. He founded Boonesborough in 1775, and Harrodsburg being settled about the same time, these two towns are, with the exception of the French settlements, the oldest in the W. Soon after Kentucky was made a county of Virginia, and the first court held at Harrodsburg in 1777. In 1790 Kentucky became a separate territory, and in 1792 was admitted into the Union. Since then, with the exception of the interruption occasioned by the Civil War, its progress has been very rapid.

KENTUCKY RESOLUTIONS, a series of nine resolutions introduced into the Kentucky Legislature in 1798, by George Nicholas, though it was afterward known that Thomas Jefferson was the author of them. They were directed against the Alien and Sedition laws, and against acts passed to punish frauds on the Bank of the United States, and emphasized the rights of the several States. Another resolution was added in 1799.

KENTUCKY, UNIVERSITY OF, a coeducational institution in Lexington, Ky.; founded in 1858 under the auspices of the Christian Church; reported at the close of 1919: Professors and instructors, 114, students, 1056; volumes in the library, 37,000; income, $440,727; president, Frank LeRand McVey, Ph.D., LL.D.

KENYA COLONY. See BRITISH EAST AFRICA.

KENYA PROTECTORATE, the name given to the dominion on the coast of Africa under the nominal sovereignty of the Sultan of Zanzibar. See ZANZIBAR.

KENYON, SIR FREDERIC GEORGE, Librarian in British Museum. He was born in London in 1863 and was educated at Winchester and Oxford. He became assistant in the British Museum in 1889 and later keeper of MSS. He has had many honors from universities. His works include: "Aristotle's Constitution of Athens"; "Classical Texts from Papyri"; "Hyperides"; "Catalogue of Greek Papyri"; "Brownings for the Young"; "Our Bible and the Ancient Manuscripts"; "Facsimiles of Biblical MSS."; "Handbook to Textual Criticism of the New Testament."

KENYON COLLEGE, an educational institution in Gambier, O.; founded in 1824 under the auspices of the Protestant Episcopal Church; reported at the close of 1919: Professors and instructors, 15; students, 164; volumes in the library, 32,000; president, Rev. W. F. Pierce, M.A., LL.D.

KENYON, WILLIAM SQUIRE, United States Senator from Iowa, born in Elyria, Ohio, in 1869. He was educated at Iowa College and studied law at the State University of Iowa. He was prosecuting attorney for five years and for two years was district judge of the eleventh judicial district. From 1910 to 1911 he was assistant to the Attorney-General of the United States. He was elected Senator in 1911. He was re-elected in 1913 and in 1918. Senator Kenyon was identified with the Liberal wing of the Republican Party and was active in the passage of liberal and progressive measures. He was chairman of the Senate Committee appointed to investigate coal strikes in 1919 and was also chairman of the committee to investigate campaign expenses in 1920.

KEOKUK, a city in Lee co., Ia.; near the confluence of the Mississippi and Des Moines rivers and on the Burlington Route, the Chicago, Rock Island, and Pacific, and other important railroads; 46 miles S. of Burlington. The city lies at the foot of the lower rapids, which are skirted by a ship canal 11 miles long, constructed by the Federal government. In 1913 there was put in operation, by the construction of a great dam, one of

the largest hydro-electric power plants in the world. It has a very large river commerce and extensive manufactures, including foundry products, boots and shoes, canned goods, overalls and shirts, brick and tile, machinery, packed pork, and pickles. Among the notable institutions are St. Vincent's Academy (R. C.), St. Peter's Boys' School (R. C.), St. Joseph's and Mercy Hospitals, the Home for the Friendless, United States government building, and several libraries. The city contains also the general offices of the Keokuk and Western railroad. Pop. (1910) 14,008; (1920) 14,423.

KEPHIR, a beverage produced by bringing about alcoholic fermentation in milk. Originally made in the Caucasus, mainly from goat's and sheep's milk. It contains approximately three-quarters of one per cent. alcohol, about one per cent. of lactic acid and two-and-one-half per cent. sugar. *Koumiss* is a similar beverage, originally made by the Tartars from mare's milk, but is also prepared from cow's milk by adding a small quantity of sugar and yeast to skim milk. It may contain as much as three per cent. alcohol.

KEPLER, or KEPPLER, JOHANN, a German astronomer; born in Weil der Stadt, Württemberg, Dec. 27, 1571. He was left to his own resources when a mere child, his education depending on his admission into the convent of Maulbronn. He afterward studied at the University of Tübingen, applying himself chiefly to mathematics and astronomy. In 1593 he was appointed Professor of Mathematics at Gratz, and about 1596 began a correspondence with Tycho Brahé, went to Prague, where he lived for 11 years in great poverty. He then obtained a mathematical appointment at Linz, and 15 years afterward was removed to the University of Rostock. In his "Mystery" (1596), he proclaims that five kinds of regular polyhedral bodies govern the five planetary orbits. At length convinced that this theory was only an error, after 22 years of patient study he was able at last to announce in his "Harmonies of the World" (1619) that the "square of a planet's periodic time is proportional to the cube of its mean distance from the sun." This rule is known as Kepler's Third Law. Finding the theory of epicycles unable to bear the strain of Tycho Brahe's accurate observations, especially in the case of the planet Mars, he endeavored to find a law for the planet's movements which would be simple and satisfactory. After enormous labor, and by a process of trial and error, he found that (1) the planet's orbit was an ellipse, of which the sun is one focus, and (2) that, as the planet describes its orbit, its radius vector traverses equal areas in equal times. These rules (published in 1609 in his work on "The Motions of Mars") are known as Kepler's First and Second Laws respectively. These laws formed the groundwork of Newton's discoveries, and are the starting-point of modern astronomy. Besides, we owe to Kepler many discoveries in optics, general physics, and geometry. He died in Ratisbon, Nov. 15, 1630.

KEPPEL, AUGUSTUS, VISCOUNT, an English naval officer; born April 2, 1725. Entering the navy, he served under Hawke in 1757, captured Goree in 1758, took part in the battle of Quiberon Bay in 1759, and in the capture of Belleisle in 1761, and commanded at the capture of Havana in 1762. In 1778 he encountered the French fleet; a sharp but indecisive action ensued, owing to a disagreement between Keppel and Sir Hugh Paleiser, his second in command. Both admirals were brought before a court-martial, but both were acquitted. In 1782, in which year he was created Viscount Keppel of Elveden in Suffolk, he became First Lord of the Admiralty, but resigned on Pitt's accession to government. Keppel died, unmarried, Oct. 3, 1786.

KEPPEL, SIR COLIN RICHARD, a British admiral. He was born in 1862 and in 1875 joined H. M. S. "Britannia." In 1882 he became midshipman of "Inconstant" during the Egyptian War and won medal and Khedive's bronze star. He was the sub-lieutenant on "Invincible," served in the Nile Expedition, 1884-1885, flag lieutenant to Duke of Edinburgh in Mediterranean, 1886-1889, and commanded gunboat flotilla on Nile, 1898. He was promoted captain in 1899, receiving thanks of parliament for Soudan services 1899. In 1910 he was rear-admiral in command of Atlantic Fleet and retired in 1917.

KEPPEL, FREDERICK PAUL, an American educator and public official, born in Staten Island, N. Y. in 1875. He graduated from Columbia University in 1898. From 1901 to 1902 he was assistant secretary and from 1902 to 1910, secretary of Columbia University. He was appointed dean of the college in 1910. He served as assistant to the secretary of war in 1917 and 1918, and was appointed third assistant secretary of war in 1918, serving until 1920. He wrote "Columbia University" (1913);

"The Undergraduate and His College" (1917).

KERAMICS. See POTTERY.

KERATIN, a term applied to the substance which forms the chief constituent of hair, feathers, nails, claws, horns, and the epidermis and epithelium of the higher animals.

KERATITIS, inflammation of the cornea, with congestion of the conjunctiva and sclerotic coat of the eye, which may go on to infiltration by pus, and destruction of the sight by ulceration. Three forms are found—viz., syphilitic, strumous or scrofulous ophthalmia, and pustular corneitis. Keratitis, when associated with suppuration, as in smallpox, and other affections, is called onyx, from its resemblance to the lunula of the nail.

KERATONYXIS, a term applied by the German surgeons to the operation of couching, performed by introducing a needle into the cornea or horny coat of the eye, and depressing or breaking the opaque lens.

KERBELA, a town and holy place in Asiatic Turkey; 60 miles S. W. of Bagdad. The pilgrims number at least 200,000 annually. The sanctity of Kerbela arises from the fact that it is built on the site of the battlefield on which Hussein, son of Ali and Fatima, lost his life (680) in attempting to maintain his right of succession to the califate. Every Shiite Moslem throughout the world who can afford it seeks sepulture in the holy ground.

KEREN, a Hebrew trumpet. The word is sometimes used in the Bible as synonymous with *shophar,* and to it is sometimes affixed *jobel,* rendered in the English version ram's horns.

KERENSKY, ALEXANDER, a Russian statesman. Born at Simbirsk where his father sent him to school. Later he studied law at the University of Petrograd and became after his graduation commissioner of oaths at Petrograd. In his practice of law in the Russian courts he championed the cause of those accused of violating the autocratic rules of the bureaucracy. This local popularity made him a member of the Fourth Duma of 1916. As a member of the Duma he associated with the small Labor following and became their leader. When in March 1917 the Czar abdicated Prince Lvoff hoped to win the support of the Socialists for his new government by giving Kerensky the post of Minister of Justice. The extreme socialists continuing their attacks upon the new government and their propaganda being especially harmful in the Army, Kerensky was appointed to the difficult and trying post of Minister of War. During May and June he worked with almost incredible energy, making speeches by the score appealing to the workers not to allow the Germans to conquer their country. His efforts resulted in an offensive movement by the Russians in Galicia on July 1, 1917, which for a time promised to restore the broken morale of the Army. But the change was only

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passing and the former soldiers of the Czar broke into a disgraceful rout within a few weeks. This failure caused a new change in the government at Petrograd; Kerensky, the compromise between the extreme socialists and the "cadets," becoming Premier. In spite of his efforts to revive Russia's fighting spirit the Bolsheviki gained perceptibly in popular favor largely because they demanded immediate peace. The downfall of the new government was hastened by the attempt of General Korniloff, a Russian of the Czar's regime, to seize the power. Although Kerensky was able to frustrate this aim of his he did it only

by the active aid of the Bolsheviki, and thereby proved his dependence upon them. They were not slow to push their advantage and on Nov. 9, 1917 drove Kerensky from power and from Russia.

KERGUELEN'S LAND, or DESOLATION ISLAND, an island of volcanic origin, in the Antarctic Ocean. The surface is mountainous (Mount Ross, 6,120 feet), and most of the interior is covered with an ice sheet and its glaciers. The island was discovered in 1772 by a Breton sailor, Kerguelen-Trémarec, and was visited by Captain Cook (who christened it Desolation Island) in 1776, by the "Challenger" in 1874, and by English, American, and German expeditions to observe the transit of Venus in the same year.

KERKENNA ISLANDS, a group of islands in the Gulf of Cabes, E. of Tunis.

KERKI, a town belonging formerly to Bokhara, Central Asia, about 120 miles S. of Bokhara city, on the left bank of the Amu-Daria or Oxus. An important place both commercially and stategically, it is the halting place of the caravans trading from Bokhara to Herat, and stands near the chief ferry over the Oxus.

KERMADEC ISLANDS, a group of volcanic islands in the Pacific Ocean, 700 miles N. E. of Auckland, New Zealand. It consists of four principal islands—Raoul or Sunday (7,200 acres), Macaulay (756 acres), Curtis, and L'Esperance—and several smaller islands. The group was discovered in 1788, and annexed by Great Britain in 1886.

KERMAN, or KARMAN (ancient Carmania), one of the E. provinces of Persia, S. of Khorasan, and having an area of about 59,000 square miles. The N. and N. E. are occupied by a frightful salt waste called the Desert of Kerman, which forms a part of the great central desert of Iran. The small tract of Nûrmanshir, toward the E., is fertile and well watered. Roses are cultivated for the manufacture of attar of roses; silk and various gums are exported. The pop. of about 600,000 is chiefly Persian; the rest are Guebres or Parsees, Belûchis, and other wandering tribes.

Kerman, the chief town, is near the middle of the province, in the central mountain range. Pop. about 60,000. In 1722 the town was destroyed by the Afghans; in 1794 it was taken and pillaged by Aga Mohammed, and 30,000 of the inhabitants made slaves. **At present** Kerman is only noted for the manufacture of the famous Kerman carpets (a sort of woolen rugs), felts, and brass cups.

KERMANSHAH, KARMANSHAH, or KIRMANSHAHAN, a town of Persia, capital of Persian Kurdistan, near the right bank of the Kerkhah river. It is the center of converging routes from Bagdad, Teheran, and Ispahan. Its commerce is considerable, and there are manufactures of carpets and weapons. Between Kermanshah and Teheran the country is mountainous. Pop. about 40,000.

KERMES MINERAL, amorphous antimony trisulphide, a brown-red powder used in the preparation of artists' colors.

KEROSENE, a name given to the principal product of the distillation of petroleum, the crude domestic oil yielding 70 per cent. of its weight. It is also obtained from bituminous shale.

KEROWLEE, the chief town of the native State of the same name in Rajputana, India, 80 miles S. W. of Agra. It was founded in 1348; is surrounded by a sandstone wall; and contains a beautiful palace and a temple of Krishna which attract many pilgrims.

KERR, LORD WALTER TALBOT, a British admiral. He was born in Scotland in 1839 and was educated at Radley College. In 1853 he entered the Navy, served in the Baltic, 1855, was with the Naval Brigade at relief and battle of Lucknow, and received Royal Humane Society medal for saving life. He was promoted captain in 1872; Rear-Admiral 1889; Vice-Admiral 1895; Admiral 1900. In 1885-1890 he was private secretary to the First Lord of Admiralty and 1890-1892 second in command in the Mediterranean; Junior Lord of the Admiralty in 1892; 2nd Lord, 1894-1895; commanded Channel Squadron, 1895-1897; Senior Naval Lord 1899-1904; Admiral of the Fleet, 1904.

KERSEY, a variety of woolen cloth, differing from ordinary broadcloth by being woven as a twill.

KERTCH, a seaport in Russia, on the Strait of Kaffa, or Yenikale, and previous to 1855 the most important port of the Crimea. The town occupies the site of the ancient Panticapæum, the seat of Bosphorian kings and once the residence of Mithridates. It was later occupied by the Byzantine empire, Turks, etc., and was turned over to Russia in 1744. It was sacked by the French and English

forces in 1855. It has an excellent harbor, and exports salt and hides. Pop. about 60,000.

KESORA kes-ō'rä), the female idol adored in the temple of Juggernaut. Its head and body are of sandalwood, its eyes two diamonds, and a third diamond is suspended round its neck; its hands are made entirely of small pearls; its bracelets are of pearls and rubies, and its robe is cloth of gold.

KESTREL, a raptorial bird; above, red spotted with black; beneath, fawn spotted with black; the head and tail of the male ashy-blue. Length of both sexes about 12½ inches. It feeds on mice, insects, and occasionally birds, and is a useful bird to the agriculturist. It is a European bird, but migrates in winter to India and Africa. It occurs also in Borneo, China, and Japan. More than 20 species are known. They resemble hawks, but have the toes shorter.

KETCH, a two-masted vessel of the galliot type, usually from 100 to 250 tons burden. Ketches were formerly often used as yachts, also as bomb-vessels.

KEUPER (koi'per), the name given in Germany to a series of beds constituting the uppermost of the three series of strata from which the Trias derives its name. In Württemberg it is about 1,000 feet thick. Alberti divides it into limestone, gypsum, and carbonaceous slate clay. The Keuper is represented in England by saliferous and gypseous shales and marls, and in France by Marnes Irisées. The Keuper sandstones, especially the lower ones, afford good building stones. They are a pale red, yellow or white, and have been largely used in the cathedrals of Worcester and Chester.

KEW, a village in Surrey, England, on the right bank of the Thames; pop. about 3,000. Foremost among objects of interest at Kew are the Royal Botanic Gardens and Arboretum, containing magnificent collections of plants and ferns, both native and exotic, and of trees and shrubs. Established in 1760 by the mother of George III., and made a national institution in 1840, the gardens now extend over 70 acres, and the arboretum 178 acres.

KEWANEE, a city in Henry co., Ill.; on the Burlington Route railroad; 32 miles N. E. of Galesburg. It is in a rich farming region and has a number of important manufactories. Pop. (1910) 9,307; (1920) 16,026.

KEWEENAW BAY, an arm of Lake Superior, N. of Michigan.

KEWEENAW POINT, a peninsula in Northern Michigan, projecting into Lake Superior. It is rich in copper mines.

KEWEENAW SERIES, in geology, a group of rocks in the United States and Canada, chiefly sandstones, amygdaloids, conglomerates, and traps, belonging to the Algonkian age; greatest total thickness about 40,000 feet. They contain the famous copper deposits of the Lake Superior region.

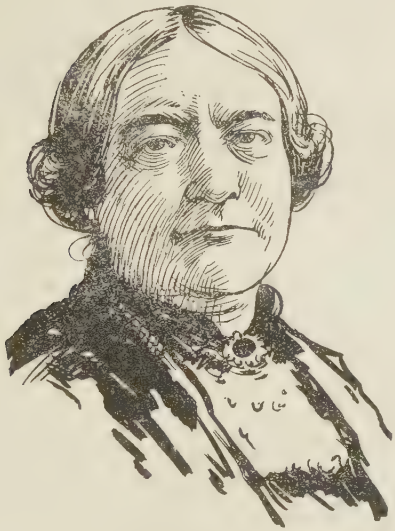
KEY, a portable instrument of metal for shooting the lock-bolt of a door. In music: (1) A mechanical contrivance for closing or opening ventages, as in flutes, clarinets, ophicleides, etc. By means of keys on such instruments, apertures too remote to be reached by the outstretched fingers are brought under control of the player. (2) A lever which brings the pallets of an organ under the control of the hand or foot of an organist. (3) A lever which controls the striking apparatus of a key-stringed instrument. In the harpischord it acted on the jack; in the pianoforte it acts on the hammer. (4) The wrest or key used for tuning instruments having metal pegs. (5) The sign placed at the commencement of the musical stave which shows the pitch of the notes, was originally called a clavis or key. This sign is called in modern music a clef. (6) Key, in its modern sense, is the starting point of the definite series of sounds which form the recognized scale. Different starting points require the relative proportion of the steps of the scale to be maintained by means of sharps or flats in the signature. The key of C major requires no flats or sharps for this purpose, hence it is called the normal key.

KEY, or **KI**, a group of islands in the Indian Archipelago, about 50 miles W. of the Arru Islands and about 70 miles from the S. W. coast of New Guinea.

KEY, ELLEN (KAROLINA SOFIA), a Swedish writer on social and ethical subjects; born in 1849 in Smalend. She began writing in 1870 by contributing to periodicals on a variety of subjects. For several years she was a teacher and lecturer at the People's Institute at Stockholm. She lived abroad from 1899 to 1910. She took an active interest in the feminist movement, and her radical ideas of love and marriage created much discussion and much unwarranted abuse. Her chief works are "The Century of the Child" (1909); "Love and Ethics" (1911); "The Younger Generation" (1914).

KEY, FRANCIS SCOTT, an American poet; born in Frederick co., Md., Aug. 9,

1780. He was a lawyer by profession and a brother-in-law of Chief Justice Taney. Being detained on one of the British ships during the bombardment of Fort McHenry, Sept. 14, 1814, he composed the words of "The Star-Spangled Banner." He died in Baltimore, Md., Jan. 11, 1843.



ELLEN KEY

KEY BOARD, the range of keys on a pianoforte or organ. Keys played by the fingers are called manuals; those by the feet are called pedals.

KEYNE, ST., a virgin said to have lived about 490, whose name survives in an old church in Cornwall near Liskeard, England, and still more so in its famous well. Whichever of a newly married pair first drinks of its water will bear rule throughout their life together.

KEYNES, JOHN MAYNARD, a British economist. He was born at Cambridge in 1883, and was educated at Eton and Cambridge. He became twelfth wrangler in 1905, and president of the Cambridge Union Society in the same year. In 1906 he passed second in open competition for Civil Service (Class I.) and was at the India Office in 1906–1908. In 1907 he became Fellow of King's College, Cambridge. He also became connected with the "Economic Journal" and has been its editor since 1912. In 1915 he became attached to the Treasury and became acting principal clerk in 1917. He has been Girdlers' lecturer in economics in the University of Cambridge since 1910, secretary of the Royal Economic Society since 1913, and was member of the Royal Commission on Indian Finance and Currency 1913-1914, He was one of the British financial representatives at Paris in 1918-1919, and his book, "The Economic Consequences of Peace," attained a great vogue. In 1913 he published "Indian Currency and Finance."

KEYSTONE, in masonry, the central voussoir at the vertex of an arch. The row or course of said stones along the crown of an arch is the key-course. In chromo-lithography, the stone on which a general outline of the picture is drawn or photo-lithographed. Its object is to furnish a guide for the production of the work upon the several color stones. Transfers from the keystones in common printing inks, more properly called "offsets" to distinguish them from transfers from which impressions can be printed, are made upon as many stones as there are colors required.

KEY WEST, a city and county-seat of Monroe co., Fla.; on the Gulf of Mexico, and on the Florida East Coast railroad. It is also a port of entry and a noteworthy United States naval station. The city is built on an island of the same name, about 50 miles off the coast, 7 miles long by 1 to 2 wide, of coral formation, elevated only 11 feet above the sea, and covered with a thin layer of soil on which tropical fruits are successfully cultivated. Key West has an excellent harbor and regular steamer communication with the principal Atlantic and Gulf ports of the United States, and with Cuba. During the American-Spanish War the city was the rendezvous of the United States navy. The principal industries are the manufacture of cigars, sponge fishing, green turtle catching, and deep-sea fishing. Key West has a United States Marine Hospital, a shipyard with marine railway, a United States dock, custom house, and the United States courts for the Southern District of Florida. Key West, the terminal of a chain of islands, is connected with the main land by a railway running through these islands and over a stone and concrete roadway connecting them with each other. This enterprise, financed and accomplished by Henry Flagler at a cost of some $15,000,000, makes it possible to carry through-cars, both with freight and passengers, between the United States and Cuba by means of an ocean ferry, capable of carrying 30 cars at a time. It was completed in 1915. Pop. (1910) 19,945; (1920) 18,749.

KHABAROVSK, the capital of the maritime province of Siberia, situated at the junction of the Amur and Ussuri rivers. The fur trade is of considerable importance in this section, and as the terminal of one of the branches of the Trans-Siberian railroad, a share of this commerce goes to this town. Pop. about 60,000.

KHAKI, a dust-colored cloth now employed as material in army uniform by the principal governments, and valued on account of its aid toward invisibility in the field. It was first used by British regiments in India, but modifications have been introduced in the United States and other countries, an olive shade of cotton being employed.

KHALIL PASHA, a Turkish soldier. He commanded the Turkish army that fought the British under General Townshend during the siege of Kut on the Tigris in the Mesopotamian campaigns of 1915. The British had already progressed beyond Kut, but finding the Turkish forces stronger than was expected they fell back on Kut. The city was then invested by the forces under Khalil Pasha, who attacked it repeatedly during a period of 147 days, at the end of which time, on April 29, 1916, the British forces under General Townshend surrendered to the Pasha.

KHALKAS COUNTRY, a region in the Chinese empire in the N. part of Mongolia. The surface is mostly mountainous, but there are also vast and fertile plains. In the S. it comprises part of the desert of Gobi. It contains many large lakes. It is divided into four khanats, governed by native chiefs tributary to the Chinese. The inhabitants are Mongol Tartars.

KHAN, an Asiatic governor; a king, a prince, a chief. Also an inn, a caravansary; of these there are two kinds, one for travelers and pilgrims, where lodging is provided free; the other for traders, where a small charge is made and a toll or duty charged on goods sold therein.

KHANDESH (khän-dāsh′), a district of British India, Bombay presidency, forming the most N. portion of the Deccan tableland, and intersected by the Tapti river. In 1906 it was divided into two districts, West and East Khandesh. Pop. about 960,000.

KHARKOV (kär′kov), the capital of the Russian province of Kharkov, and one of the chief towns of the Ukraine; 465 miles S. by W. of Moscow. It is the seat of a Greek bishop and of a university. This university was an energetic center of the Nihilist movement, especially previous to the assassination of Alexander II. in 1881. Pop. about 250,000. The province situated in Little Russia has an area of 21,041 square miles; pop. about 3,500,000.

KHARTUM, a town in the Eastern Sudan, on the left bank of the Blue Nile, near its junction with the White Nile. It has sprung up since 1830, and was the capital of and largest town in the Egyptian Sudan, and the emporium of a large trade, ivory, gums, ostrich feathers, senna, etc., being exchanged for European goods, and slaves being also dealt in. It was the scene of Gordon's heroic defense against the insurgent Sudanese, and of his death in January, 1885. It was taken and held by the Mahdi and his successor, the Khalifa, till September, 1898, when it was recaptured by General Kitchener. Pop. about 70,000.

KHAYA (kā′uh), a genus of trees of the order *Cedrelaceæ*. The kassou-khaye of Senegal (*K. Senegalensis*), one of the most abundant forest trees in that part of Africa, attains a height of 80 or 100 feet, and is much valued for its timber, called cailcedra, or African mahogany, which is reddish colored, very hard, durable, and of beautiful grain.

KHAYYAM, OMAR. See OMAR KHAYYAM.

KHEDIVE (ka-dēv′), the official title of the Pasha or Governor of Egypt; it implies a rank superior to a prince or viceroy, but inferior to that of an independent monarch.

KHELAT, capital of Baluchistan, and the residence of the Khan. The houses of the city are mostly mud huts and the industries, excepting that in rude pottery, are negligible. The English occupied the city in the Afghan War in 1839 after a considerable resistance on the part of the garrison. Since 1877 a British agent with a military escort has been the real ruler of the city. Pop. about 15,000.

KHERSON, the capital of the former Russian province of that name (area, 27,337 square miles; pop. about 4,000,000); on the Dnieper, N. E. of Odessa. The town was laid out by Prince Potemkin in 1778 as a port for the construction of ships of war. It has a large trade in timber, and manufactures soap, tallow, beer, and tobacco. Wool cleansing is an important industry. At Kherson Potemkin is buried, and

John Howard, the prison reformer, died. Pop. about 100,000.

KHIVA, a semi-independent khanate of central Asia, forming part of Turkestan. It formerly occupied a large extent of surface on both sides of the Amu-Darya or Oxus, but since the cession to Russia, in 1873, of its territory on the E. of the Amu, it is confined to the W. side of this river. A great part of the surface consists of deserts, thinly inhabited or uninhabitable; but along the Amu the land consists of rich alluvial loam of the greatest natural fertility, assisted by irrigation, and securing luxuriant crops of grain, cotton, madder, fruit, including the vine and vegetables. Pop. about 800,000. The capital lies on an alluvial flat at the junction of two canals, 50 miles W. of the left bank of the Amu. Among the principal buildings are two palaces of the khan, a number of mosques, and the castles of the principal state officers. Pop. about 5,000.

KHOOTBAH, an oration delivered every Friday after the forenoon service in the principal Mohammedan mosques, in which the speaker praises God, blesses Mohammed, and prays for the sultan or king.

KHORASAN (*h*ō-räs-än′), a province of Persia, bordering on Afghanistan; area, 140,000 square miles; pop. about 900,000. Much of the surface consists of deserts, but there are also fertile districts producing crops of cotton, hemp, aromatic and medicinal herbs. The most valuable mineral is the turquoise from the ancient mines of Nishapur. The principal manufactures are silk and woolen stuffs, carpets, muskets, and sword-blades. About two-thirds of the inhabitants are Persians proper; the remainder are chiefly Turcomans and Kurds.

KHORDAD (*h*or-däd′), the good genius of the Persians.

KHOSRU, a Persian prince, who flourished in the 6th century of our era and figures brilliantly in poetry and legend. His grandson, also named Khosru, reigned from 590 to 628.

KHOTAN (*h*ō-tän′), called locally ILCHI, a city and district of eastern Turkestan, lying at the N. base of the Kuen-Lun Mountains, and only 6 miles from the desert. The district is rich in gold and jade, manufactures silk, and exports silk stuff, carpets, and jade ware. Pop. about 50,000.

KHYBER PASS (*h*ī′ber), a military road between the Punjab and Afghanistan, winding in a N. W. direction for 33 miles between the projecting spurs of two inclosing ranges of hills. The pass is merely the bed of a narrow watercourse. The mountains on either side are in many places perpendicular walls of smooth rock, and can be climbed only in a few places; they vary in height from 1,404 to 3,373 feet. Over the roughest parts of the pass artillery has to be dragged by men. The Khyber Pass has been the key of the adjacent regions in either direction from the days of Alexander the Great. During the Afghan Wars of 1839–1842 it was twice traversed by a British army in spite of an obstinate defense by the natives. The first fighting in the Afghan War of 1878–1880 was in forcing an entrance into this pass. It was stipulated in the treaty of Gandamak (1879) that the Anglo-Indian authorities were in future to have full control of this pass.

KIAU-CHAU (kē-ō-chow′), a town in China, in the province of Shantung, occupied by Germany in 1897, and formally ceded to her on a 99 years' lease by China in 1898. The territory conceded with the town stretches about 160 miles along the coast, and extends inland to an average distance of 20 miles. Pop. (1915) 9,264. In August, 1914, the Japanese Government called on Germany to formally deliver to them this fortified port by Sept. 15, 1914. On Aug. 23, Japan declared war against Germany. Japanese troops, assisted by a British contingent, attacked the fort on Nov. 7, 1914. The garrison, after a brave resistance, surrendered May 15, 1915. Japan, during the peace negotiations of 1919, solemnly promised to return the territory to China if allowed to control certain privileges and concessions previously held by Germany.

KIDD, BENJAMIN, an English sociologist; born in 1858. He entered the inland-revenue service of Great Britain in 1877. He wrote "Social Evolution" (1894); "The Control of the Tropics" (1898); "Individualism and After" (1908); "The Two Principal Laws of Sociology" (1909). Died in 1916.

KIDD, WILLIAM, an American pirate; born probably in Greenock, Scotland. He is supposed to have been the son of a worthy Covenanting minister. The lad went early to sea, saw much hard service privateering against the French, and gained a high reputation for stubborn courage, and in 1691 a reward of $900 from the council of New York City. At this time the American colonies were supposed to be nests of

pirates who infested the Indian Ocean, and Coote, Earl of Bellomont, was sent out by William III. as governor of New York and Massachusetts with special instructions to suppress the pest. A ship of 30 guns was fitted out by a private company in London and given to Kidd to act against the French and capture pirates. In January, 1697, he reached Madagascar, the chief rendezvous of the pirates, but ere long reports reached England that Captain Kidd was playing the game of pirate himself. After a two years' cruise he returned to the West Indies, and a few months later had the temerity to go to Boston. He was arrested and sent to England, where he was tried for piracy, found guilty, and hanged at Execution Dock, London, May 24, 1701. He had buried a store of treasure on Gardiner's Island, off Long Island, which was seized, amounting with what was found elsewhere to $70,000.

KIDERLEN-WAECHTER, ALFRED VON, a German diplomat. Born in 1852, he entered the foreign service in 1879, and from then until 1888 was successively secretary of the German embassies in St. Petersburg, Paris, and Constantinople. Served in the foreign office until 1894, when he became minister to Denmark and later to Rumania. In 1911 he became Imperial Foreign Secretary, a position he held until his death. During his term the Moroccan crisis between Germany and England and France occurred, and it reqcired all of his talent to prevent it from causing a European war. He also managed to secure for Germany important concessions in the Congo region, in return for a recognition of French rights in Morocco. He died in 1912.

KIDNAPPING, the act of forcibly abducting or stealing human beings; man stealing, child stealing.

KIDNEY, the secreting organs of the urine, two in number, situated in the lumbar region on each side of the spine, which they approach on their upper extremities. The kidney is from four to five inches long, about two and a half broad, somewhat more than one in thickness, and from three to five ounces in weight. Covered by a layer of fat, they rest on the diaphragm, the right, on account of the liver, being somewhat lower than the left. The anterior surfaces are convex, the posterior flat.

KIDNEY BEAN, the genus *Phaseolus*. The common kidney bean is *P. vulgaris;* the scarlet kidney bean, the scarlet running kidney bean, or scarlet runner, is *P. multiflorus;* its roots are narcotic, as are those of the royal kidney bean, *P. radiatus;* and the underground kidney bean is *Arachis hypogæa*.

KIEFF, OR KIEV, formerly a government of Russia, but as the result of the World War now part of the Republic of Ukraine. Its area is about 20,000 square miles of closely wooded, swampy country. The district is particularly noted for the excellent breed of horned cattle raised on the steppes of the provinces. The sugar-refineries have assumed the leading place among its industries. Pop. about 4,500,000.

KIEFF (kē'ef), or **KIEV** (kē'ev), one of the oldest towns of Russian Ukraine, and ecclesiastically one of the most important; on the Dnieper. According to tradition it was founded before the Christian era. In 882 it was made the capital of the Russian principality, and remained so until 1169. Here in 988 Christianity was first preached in Russia by St. Vladimir; and ever since that date Kieff has been one of the chief ecclesiastical and intellectual centers of Russia. The town was captured and nearly destroyed by the Mongols in 1240, and it remained in their hands for 80 years. From 1320 to 1569 it was in the possession of Lithuania, then of Poland down to 1654, in which year it was annexed to Russia. The most notable institution in the town is the Petchersk monastery, which is visited by more than 250,000 pilgrims annually. Underneath the monastery are a number of caves containing tombs of the chief saints of the Russian Church. The cathedral of St. Sophia, erected in 1037 on the spot where Yaroslaff defeated (1036) the Petchenegs, contains the tombs of the grand-dukes of Russia and a magnificent altar ornamented with beautiful mosaics; the interior of the cathedral resembles a labyrinth. The cathedral church of the Assumption harbors the bones of seven saints brought from Constantinople, and has a beautiful belfry with a peal of 12 bells. There is a university, transferred from Vilna in 1833. The industry is unimportant, except tanning and the manufacture of wax candles. Considerable trade is done, especially at the fairs, the most celebrated of which is held during the last half of January. The fortress of Kieff was begun by Peter the Great in 1706. The town was the scene of a terrible massacre of the Jews in 1905. It is the capital of Ukraine. Pop. about 650,000.

KIEL (kēl), a town of the Prussian province of Schleswig-Holstein; 66 miles from Hamburg, at the head of a deep

fjord (11 miles long) of the Baltic, which admits large ships to anchor close to the town. It is the headquarters of the German Baltic Sea navy, and is also an important commercial port. The chief part of its trade (before the World War) was carried on with the towns of Denmark and Sweden; corn, coal, timber, and cattle being imported, while coal, flour, beer, butter, cheese and fish were exported. There are iron foundries, shipbuilding yards, corn mills, breweries, and cabinet makers' works. Kiel is the seat of a university, founded in 1665. The castle, built in the 13th century and enlarged by Catherine II. of Russia in the 18th, shelters the university library of 200,000 volumes and a museum with sculptures by Thorwaldsen. The Thaulow Museum contains Schleswig-Holstein carved work of the 15th–18th centuries. The bay is defended by a series of forts placed near its sea entrance. The Baltic canal connects the Elbe and the Bay of Kiel. The old town, dating from before the 10th century, has been enlarged by the suburbs of Brunswick and Düsternbrook. Here was signed in 1814 the treaty between Denmark, Sweden, and England, by which Sweden exchanged Pomerania for Norway. In the World War Kiel was Germany's principal naval base. Here mutinies among the sailors of the fleet broke out in 1917 and again in 1918. The mutiny in October-November of that year could not be suppressed but spread to Berlin and led to the overthrow of the monarchy. See WORLD WAR: GERMANY.

KIEL CANAL, a German canal, extending from Brunsbüttel on the Elbe to Holtenau on the Baltic and connecting the North Sea with the Baltic Sea. About 60 miles in length, and with a depth of 36 feet the largest of war vessels could pass from the North Sea to the Baltic, or vice versa. This fact proved of great importance during the World War, since the inferior German Navy was able to effectively control the Baltic Sea, the English fleet being unable or unwilling to leave its base for the Baltic Sea or to divide its forces. The canal was, of course, prior to 1920, very heavily fortified and owned and operated by the German Government. Sea-going vessels, in going from the Baltic to the North Sea, save nearly 200 miles by using this canal.

The treaty of Versailles of 1919 contained important clauses relating to the canal; the most important being that it shall be maintained "free and open to the vessels of commerce and of war of all nations . . . on terms of entire equality." Germany is, therefore, unable to grant any preferential tolls to her own vessels, and is forbidden to charge more than sufficient for the operating expenses. Cases in dispute are to be settled by a Joint Commission of Allied and German membership. Thus the canal is really under international control.

KIELCE, a province of Poland, before the World War a Polish province of Russia. It forms the S. W. end of Poland, has an area of nearly 4,000 square miles and is watered by the Vistula and traversed by spurs of the Carpathians. Before the war the pop. was 992,500, of which 11 per cent. was Jewish, the rest being Poles with some intermixture of Ruthenians, or Little Russians. The capital, of the same name, is a city of about 32,000 pop., 107 miles south of Warsaw. The province was the scene of much of the fighting on the Eastern Front, between the Germans and Russians, during the war, but was finally assigned to Poland by the Peace Conference, as an integral part of that nation's territory.

KIELLAND, or KJELLAND, ALEXANDER LANGE (chel'and), a Norwegian novelist and dramatist; born in Stavanger, in 1849. A strong representative of the realistic school, he was a foe to all forms of ecclesiastical tyranny. His writings have been supposed to show the influence of Balzac and Zola. Notable among his novels are: "Garman and Worse" (1880), his first; "Laboring People" (1881); "Skipper Worse" (1882) and "Else." Of his dramas the best are: "Betty's Formynder" (Betty's Guardian: 1887); "Professoren" (1888). He died April 6, 1906.

KIESERITE (kē'zer-it), a sulphate of magnesia obtained at Stassfurt and elsewhere, and employed as a source of epsom salt, and in the manufacture of manures. Mixed with quicklime and water it hardens into a mass which, after heating, pulverizing, and again mixing with water, becomes of a marble-like consistency, and may be made into ornamental articles, etc.

KIKUYU, a district in the British East African Protectorate. Various Christian missionary bodies have worked in this region, which became famous in the Christian world by the protest made by one of the Bishops of the English Church against permitting non-members to take part in the communion service. A conference called by the Archbishop of Canterbury in 1914 did not sustain the protest.

KILAUEA (kil-ou-ē′ä), an active volcano in Hawaii. It has an oval crater, 9 miles in circumference, with a lake of red and boiling lava at the bottom, over 1,000 feet below the crater's mouth.

KILDA, ST., a small and rocky island in the Atlantic Ocean, belonging to Scotland, 40 miles N. W. from the N. W. extremity of the island of N. Uist.

KILDARE, a town in Kildare county, Ireland, 30 miles S. W. of Dublin. Bridget founded a nunnery here, and the older name Druim Criaidh was changed to Cil-dara, the cell or church of the oak, from an old tree under whose shadow the saint built her cell.

KILIMA-NJARO (kil-ē-män-jä′ro), an isolated mountain mass in East Africa, standing between Victoria Nyanza and the coast. The mass consists of two peaks, or rather craters, Kibo and Kimawenzi, connected by a broad saddle (14,000 feet) studded with lava hills. Its highest point is about 19,680 feet above sea-level. Kimawenzi is more than 17,250 feet high.

KILKENNY, the capital of the Irish county of that name. Near the city is the Roman Catholic college of St. Kyran. Several Parliaments were held at Kilkenny in the 14th century, and even down to Henry VIII. it was the residence, occasionally at any rate, of the lord-lieutenant. It was here that in 1367 was passed the stringent "Statute of Kilkenny," meant to prevent the Anglo-Irish from becoming more Irish—forbidding intermarriage, etc.—and here that in 1642 the Assembly of Confederate Catholics gathered. Cromwell laid siege to the city in 1648, and in 1650 it capitulated on honorable terms. The fable of the "Kilkenny cats," was a satire on the contentions of Kilkenny and Irishtown in the 17th centuries which went on till both towns were impoverished. Pop. about 10,000.

KILLARNEY, a small market town in the county of Kerry, Ireland, 1½ miles from the lower Killarney Lake. Its importance depends on the crowds of tourists who come to visit the famous lakes. On the shores of the lakes are marble quarries, yielding several varieties—green, red, white, and brown—and also some old copper mines.

KILLARNEY, LAKES OF, a series of three connected sheets of water. These famous lakes are situated in a basin in the midst of the mountains of Kerry, some of which rise abruptly from the water's edge densely clothed with trees from base to summit. Between the lower and the middle lakes is the fine ruin of Muckross Abbey.

KILLDEE, or **KILLDEER**, a small American bird akin to the plover. It is of a light brown color above, each feather tipped with brownish-red. There is a black ring round the neck.

KILLER WHALE, one of the *Delphinidæ* (dolphins). It is from 18 to 30 feet long, glossy black above, and white below, with a white patch above the eye, and sometimes a grayish saddle mark on the back. Its fierceness and voracity constitute it the terror of the ocean. They hunt in small packs, and are particularly abundant near some of the Pacific sealing grounds.

KILLIECRANKIE, a pass through the Grampian Mountains in Scotland. At the N. extremity, the Revolutionary army, under General Mackay, was utterly defeated, in 1689, by the Royalists, under Grahame of Claverhouse, who fell in the moment of victory.

KILMER, JOYCE, an American poet and author, born in New Brunswick, N. J., in 1886. He was engaged in newspaper and editorial work in New York City and was editor of the "New York Times Review of Books" in 1913. He was killed in 1918 while serving with the American Expeditionary Forces in France. His published writings include "Summer of Love" (1911); "Trees and Other Poems" (1915); "Main Street and Other Poems" (1917); "Literature in the Making" (1917). He also compiled "Dreams and Images, an Anthology of Catholic Poets" (1917).

KILN, a furnace for calcining; as plaster of Paris or carbonate of lime in its shapes of marble, chalk, or limestone; for baking articles of clay in the biscuit condition, as a biscuit-kiln; for drying malt, hops, lumber, grain, fruit, starch, biscuit, etc.; for vitrifying articles of clay, such as pottery, porcelain, bricks.

KILOGRAMME, or **KILOGRAM**, a French measure of weight = 1,000 grammes. A kilogramme as a measure of mass = 15,432.34874 grains, of which the new standard pound contains 7,000. A kilogramme weighs nearly 9.81×10^5 dynes. In measuring pressure, a kilogramme per square meter = 98.1 dynes per square centimeter nearly; a kilogramme per square decimeter = 9.81×10^3 dynes per square centimeter nearly; a kilogramme per square centimeter = 9.81×10^5 dynes per square centimeter nearly; a kilogramme per square millimeter = 9.81×10^7 dynes per square centimeter nearly.

KILOLITER, or **KILOLITRE**, a French measure of capacity for fluids, 1,000 liters.

KILOMETER, or **KILOMETRE**, a French measure of length or distance, 1,000 meters. It is 1093.63 yards, about five-eighths of a mile.

KILOWATT, an old French solid measure containing 1,000 cubic meters = 35316.6 English cubic feet.

KILPATRICK, HUGH JUDSON, an American military officer; born in Deckerton, N. J., Jan. 14, 1836. He was graduated at West Point in 1861. He served as captain at the battle of Big Bethel. In 1862 he took part in various operations of the army of the Potomac. He was appointed a brigadier-general of volunteers in May, 1863, after which he was employed in a raid to Richmond for the release of Federal prisoners. He commanded the cavalry of Sherman's army on its march from Atlanta to Savannah. He was minister to Chile from 1865 to 1870, was reappointed in 1881. He died in Valparaiso, Dec. 4, 1881.

KIMBERLEY, capital and chief town of Griqualand West, South Africa, the most important inland town of the Cape Colony. The British flag was first hoisted at Kimberley in November, 1871; but Griqualand West did not become an integral portion of the Cape Colony till October, 1880. The climate is healthful; the soil, where water can be obtained, fertile. It holds the direct road from Cape Town and the sea to the Orange River Colony, the Transvaal, and the immense territories to the N.; and is important to travelers and "up-country" traders as the starting-place for the interior. Kimberley owes its existence to the diamond mines, the working of which dates from July, 1871, and of which the most important are Du Toit's Pan, Bultfontein, De Beer's, and Kimberley Central. The town was the center of important military operations in 1900, during the Boer War. Pop. (1918) 17,226.

KINBURN, or **KILBURN**, a former fort of south Russia, opposite Otchakoff. It figured prominently in the Russo-Turkish Wars of 1771–1774 and 1787; and during the Crimean War it fell before the Allies, Oct. 17, 1855. The fortifications were razed in 1860.

KINCARDINESHIRE, OR THE MEARNS, a northern county of Scotland, bounded on the N. by the river Dee and Aberdeenshire, by Forfarshire on the W. and S., and the North Sea on the E. The principal rivers are Bervie Water, flowing south-eastward to the North Sea; the Water of Feugh; the Dye; Luther Water; and the Cowie. The county belonged to the old Celtic kingdom of Scotland; area, 244,000 acres, of which 121,000 are in cultivation. In the W. and N. W. the Grampians traverse the county. The principal towns are Stonehaven, which is the capital; Laurencekirk and Inverbervie. Pop. about 45,000.

KINCHOK, one of the two chief divinities of Tibet.

KINDERGARTEN, a system of education for infants and young children, devised by Frederick Fröbel (1782–1852), by whom, in conjunction with Ronge, it was first carried out at Hamburg, in 1849. Knowledge is imparted in an attractive form, chiefly by simple object lessons, by toys, games, singing, and work—plaiting, weaving, folding, and cutting out paper. Corporal punishment is excluded. The kindergarten system is popular in the United States, and a part of the public school system in all large cities.

KINDERSCOUT GRIT, a name given to the coarse grits and flagstones which occur toward the base of the Millstone Grit of England. The rock forms the tableland of Kinderscout in the Peak country. The grit is quarried at Eyam Moore, Derwent Edge, and other places, and is used for engine beds, foundations, and reservoir work.

KINEMATICS, the science of pure motion, admitting conceptions of time and velocity, but excluding the conception of force. From the kinematics of a point, all the properties of a curve may be deduced.

KINETIC MOTOR, a vehicle impelled by means of stored energy. It is really a "stored-steam" system.

KINETICS, a branch of dynamics which treats of forces imparting motion to or influencing motion already imparted to bodies.

KINETOGRAPH, an apparatus for taking pictures of moving objects in their changing positions. It was invented by Edison, a forerunner of the present motion picture machines.

KINETO-PHONOGRAPH, an apparatus combining the principles of the kinetograph, the vitascope, and the phonograph, invented by Thomas A. Edison.

KINETOSCOPE, an instrument invented by Perigal, for illustrating the

result of the combination of circular movements of different radii in the production of curves; called also kinescope. Also an apparatus invented by Thomas A. Edison for exhibiting the pictures taken by the kinetograph.

KING, CLARENCE, an American geologist; born in Newport, R. I., Jan. 6, 1842. In 1863 he joined the State geological survey of California, making the first detailed surveys of the Yosemite Valley. In 1867 he was in charge of the United States geological survey of the 40th parallel, and for the next five years did work from the California Sierras to Eastern Wyoming, the results being published as "Professional Papers of the Engineer Department of the United States Survey" (1870–1878). When in 1879 the different geological surveys were united in one bureau of the Department of the Interior, he was made first director of the Survey, holding the position till 1881. He was elected in 1876 a member of the National Academy of Science. His best book is "Mountaineering in the Sierras." He died in Arizona, Dec. 24, 1901.

KING, HENRY CHURCHILL, an American educator; born in Hillsdale, Mich., in 1858. He graduated from Oberlin College in 1878 and from Oberlin Theological Seminary in 1882. He took post-graduate courses at Harvard and acted as tutor at Oberlin College from 1879 to 1882. He was successively professor of philosophy, professor of theology, dean and president of that institution. He was appointed to the latter position in 1902. He wrote much on religious and economic subjects. He was a trustee of the Carnegie Foundation and was a member of many other organizations. He wrote: "The Laws of Friendship, Human and Divine" (1909); "The Ethics of Jesus" (1909); "Religion as Life" (1913); "Fundamental Questions" (1917).

KING, HORATIO, an American statesman; born in Paris, Me., June 21, 1811; learned the printer's trade; clerk in the postoffice department in Washington in 1839; first assistant postmaster-general in 1854; was postmaster-general January-March, 1861; was the first man in public office to deny the power of a State to withdraw from the Union. His publications include "An Oration before the Union Literary Society of Washington" (1841); and "Sketches of Travel; or Twelve Months in Europe" (1878). He died in Washington, D. C., May 20, 1897.

KING, RUFUS, an American statesman; born in Scarboro, Me., March 24, 1755. Studied at Harvard College in 1773, admitted to the bar in 1778; elected to Congress in 1784; elected to the United States Senate, serving 1789–1796; was United States minister to Great Britain, 1796-1803; elected third time to Senate in 1813, and won renown as an orator by speech on the burning of Washington by the British. In 1819–1825 member of Senate, then minister to England. He was the Federalist candidate for the vice-presidency in 1804 and 1808. With Hamilton, wrote the "Camillus Letters." He died in Jamaica, Long Island, N. Y., April 29, 1827.

KING, THOMAS STARR, an American clergyman; born in New York City, Dec. 17, 1824. During the Civil War he worked earnestly for the Union cause and was the chief factor in raising large sums of money for the United States Sanitary Commission. Author of "White Hills, Their Legends, Landscapes and Poetry." His writings were published under the title of "Patriotism and Other Papers." He died March 4, 1864.

KING, (WILLIAM BENJAMIN) BASIL, a clergyman and novelist, born in Charlottetown, Canada, in 1859. He was educated in the schools of that city and at King's College, Windsor, Canada. He engaged in authorship in 1900 and produced many novels including "Let Not Man Put Asunder" (1901); "The Giant's Strength" (1907); "Wild Olive" (1910); "Street Called Straight" (1912); "The High Heart" (1917); "The City of Comrades" (1919); and "The Abolishing of Death" (1919).

KING, WILLIAM HENRY, United States Senator from Utah; born in Fillmore City, Utah, in 1864. He was educated at the Brigham Young Academy and at the University of Utah. After studying law at the University of Michigan he began the practice in Utah. For three years he was a member of the territorial legislature and served as county attorney and city attorney. He was appointed assistant judge of the Supreme Court of Utah in 1904 and served in Congress from 1897 to 1899. He was again elected to Congress in 1900, serving until 1901. He was defeated for the United States Senate in 1905, and in 1917 defeated George Sutherland for the term 1917 to 1923. He took a prominent part in the Senate debates on the Treaty of Peace with Germany, in 1919 and 1920.

KINGBIRD, a name given to a shrike, the *Tyrannus intrepidus*, of the United States. It is above of a dark slaty ash-color, and beneath white; the feathers of the crown are orange. They build in the United States, breeding in general twice a year, and laying five eggs each time. Named from an erectile orange-colored crest on the head, as also from the tyrannical character of the bird. It is insectivorous, and is not in good repute with beekeepers.

KING COLE, a legendary King of Britain, who lived in the 3d century.

KING COTTON, a popular personification of the cotton plant in the United States.

KINGCRAB, the English name of the crabs belonging to the genus *Limulus*. They have their body commencing in front with a broad crescent-shaped carapace, with its convexity forward, the whole terminated posteriorly by a long spine-like tail. The kingcrabs are the only representatives of the order and subdivision of *Crustacea* called *Xyphosura*. They are found in the seas and islands of both the Asiatic and American shores of the Pacific Ocean.

KINGDOM, the designation of the highest and most comprehensive of the divisions into which natural objects are arranged. They are three in number, the Animal, the Vegetable, and the Mineral kingdoms.

KINGDOM OF HEAVEN, or **KINGDOM OF GOD**. See HEAVEN.

KINGFISH, a beautiful member of the mackerel family. The back and sides are of a rich green, with purple and gold reflections; the under parts yellowish-green, the fins vermilion. Called also the opah.

KINGFISHER, the genus *Alcedo*. The common kingfisher, *A. ispida*, is blue above, greener on the mantle and scapulars, with beautiful rich cobalt on the back, rump, and upper tail coverts; a spot in front of the eye, the eye coverts and under parts are rufous; the head is blue, barred with black; the wings blue, with spots of brighter cobalt on the coverts; the throat and a patch on each side of the neck are white; the cheeks and sides of the breast are blue; the bill black, the feet red. The female and young are like the male, but are red at the base of the under mandible. Seen on the upper part of the Thames and other rivers in the S. of England perched over the water, into which it darts from time to time, bringing back a fish or a water insect. It bores a hole in the ground, makes a nest of fish bones, and lays six or seven eggs.

KING GEORGE'S SOUND, an inlet 5 miles N. and S., and 5 miles broad, at the S. W. angle of western Australia; is an excellent roadstead, and contains two landlocked recesses, Princess Royal and Oyster Harbors. Albany, on Princess Royal Harbor, is a port of call for mail steamers.

KING GEORGE'S WAR, a war between Great Britain and its American colonies, against France and its Indian allies, so named from King George II. Its principal event was the capture of Louisburg, on Cape Breton Island, the strongest and most important French fortress in America except Quebec. The war began in 1743 and was ended in 1748 by the treaty of Aix-la-Chapelle.

KINGLAKE, ALEXANDER WILLIAM, an English historian; born in Taunton, Somerset, England, Aug. 5, 1809. Having accompanied the English army to the Crimea in 1854, he wrote his masterpiece, "The Invasion of the Crimea, its Origin and an Account of its Progress" (8 vols., 1863–1887). It is the standard work on the subject, though perhaps it is slightly diffuse, and partial to his friend, Lord Raglan. Before the Crimean War he also wrote "Eöthen." He died in London, Jan. 2, 1891.

KING OF THE HERRINGS, the popular name of the *Chimæra monstrosa*, or Arctic chimæra, a fish also known in certain localities by the name of "sea-cat."

KING PHILIP'S WAR, a conflict between the New England colonists and the confederated Indian tribes, the Narragansetts, the Wampanoags, and the Nipmucks, carried on in 1675–1676. The Indians were led by Philip, a chief, who was killed at Mount Hope, R. I. Of the 90 towns of the colonists, 12 were utterly destroyed, while more than 40 others suffered from fire and pillage. More than 1,000 men were killed and many women and children. The Indians were annihilated.

KINGPOST, or **KINGPIECE**, the middle post of a roof, standing in the tie beam and reaching up to the ridge; it is often formed into an octagonal column with capital and base, and small struts or bases, which are slightly curved, spreading from it above the capital to some other timbers. Also known as crown post, or joggle post.

KINGS, a name of two books of the Old Testament, relating the history of the Hebrew monarchy (united and divided) from the proclamations of Solomon, a little before the death of David, to the death of Jehoiachim—a period not less than 431, and perhaps more than 453 years. In Hebrew, the two Books of Kings were originally one volume: the Septuagint divided them, calling them the third and fourth of the Kingdoms, and the Vulgate the third and fourth of the Kings. The unity of style between I and II Kings proves them to have had the same editor. The materials to which he had access for the composition of the book seem to have been governmental records, published histories of individual kings, with memoirs of Elijah and Elisha, from an enthusiastic friend and admirer. The work contemplates events from the prophetic, as the books of Chronicles do from the priestly, point of view.

KING'S COLLEGE, an institution adjoining Somerset House, in London, founded by royal charter in 1829, and confirmed by act of Parliament in 1882. The college being strictly in connection with the Church of England, divinity lectures are a regular part of its routine. The usual university education for young men is provided in theology, literature (ancient and modern), science, engineering and applied science, and medicine. It has also a school of fine art, and a department for the preparation of candidates for the civil service.

KING'S (or QUEEN'S) COUNSEL, certain barristers at law, in England and Ireland, who have been appointed by letters-patent. The office is entirely honorary, but it gives a right of preaudience in all the courts, according to the date of appointment. The appointment practically belongs to the Lord Chancellor. In spite of their title they are not prevented from being retained and acting for ordinary clients, except that in defending prisoners and acting in suits against the crown they require a special license from the crown, which is, however, never refused.

KING'S EVIL, an old name for scrofula, which was believed to be cured by the royal touch. The practice began with Edward the Confessor, in 1051. It reached its maximum in the ultra-loyal days of Charles II., when it is said that 92,107 persons were touched.

KINGSLEY, CHARLES, an English author; born in Holne, near Dartmoor, Devonshire, June 13, 1819. He became vicar (1842) of Eversley, where he spent a large part of his life. In 1848 he published "The Saint's Tragedy," a drama in verse on the story of St. Elizabeth of Hungary. This was followed by a series of novels, "Alton Locke, Tailor and Poet" (1849), which led to the establishment of co-operative associations in England, "Yeast" (1851); "Hypatia" (1853); "Westward Ho!" (1855); "The Water Babies" (1863). Of his verse, "Poems," chiefly lyric, appeared in 1856, and "Andromeda and Other Poems" in 1858. "Lectures delivered in America" (1875). His controversy with John Henry (afterward Cardinal) Newman, in 1864, led to the latter publishing his celebrated "Apologia pro Vita Sua." Kingsley became Professor of Modern History at Cambridge in 1860, chaplain to the queen in 1860, canon of Westminster in 1873. He died in Eversley, Hampshire, Jan. 23, 1875.

KINGSLEY, FLORENCE MORSE, an American author, born near Medina, O., in 1859. She studied at Wellesley College and married in 1882, Charles R. Kingsley. She wrote many books, some of which attained a wide circulation. Among these are "Titus—a Comrade of the Cross" (1894); "Resurrection of Miss Cynthia" (1905); "The Glass House" (1909); "Veronica" (1913); "The Heart of Philura" (1915).

KINGSLEY, HENRY, an English novelist; brother of Charles; born in Barnack, Northamptonshire, Jan. 2, 1830. An unsuccessful experiment at gold mining in Australia gave him the material for his first novel, "The Recollections of Geoffrey Hamlyn" (1859). He followed it with "Ravenshoe" (1861); "Austin Elliot" (1863); "The Hillyars and the Burtons" (1865); "Leighton Court" (1866). The battle of Sedan, at which he was present, formed the subject of "Valentin: A French Boy's Story of Sedan" (1872). He died in Cuckfield, Sussex, May 24, 1876.

KINGSLEY, MARY H., an English author; born in 1850; daughter of Dr. George H. Kingsley, and niece of Canon Kingsley, traveled extensively in West Africa, and was a Fellow of the Anthropological Institute of Great Britain and Ireland. Her works include "Travels in West Africa" (1897); "West African Studies" (1899); and "The Story of West Africa" (1900). She died in Simonstown, Cape Colony, June 3, 1900.

KING'S MOUNTAIN, an eminence in York co., S. C., 80 miles N. W. of Columbia, where a battle took place Oct. 7, 1780, between the Americans, under Sevier, Shelby, Campbell, etc., and the

British, under Ferguson. The latter were defeated with a loss of 456 killed and wounded, among whom was the commander, and 648 taken prisoners.

KINGSTON, a city and county-seat of Ulster co., N. Y.; on the Hudson river at the E. terminus of the Hudson and Delaware canal, and on the West Shore and other railroads; 91 miles N. of New York City. It comprises the former villages of Kingston, Rondout, and Wilbur; has a large river commerce and trade in coal, brick, lime, lumber, cement, and bluestone; is a trade center for three counties; and contains, Children's Industrial Home, a city hospital, a gravity system of waterworks supplied by mountain streams, and National and savings banks. It received a charter in 1661, under the name of Wiltwick, was first settled in 1665, and was incorporated by patent in 1667. On Feb. 19, 1777, the first State convention adjourned from Fishkill to Kingston, and the first State constitution was proclaimed in front of the court house, April 22, 1777. The Legislature met here in September of the same year, but was dispersed by the approach of a British force under Sir Henry Clinton, Oct. 7, when the town was burned. Being afterward rebuilt, it was incorporated as a village in 1805, and as a city in 1872. Pop. (1910) 25,908; (1920) 26,688.

KINGSTON, the commercial capital of Jamaica; on the N. side of a landlocked harbor, the best in the island, and, for its size, one of the best in the world. It was founded in 1693, after the neighboring town of Port Royal had been destroyed by an earthquake. Kingston itself suffered severe losses in life and property as a result of an earthquake in 1907. Pop. about 60,000.

KINGSTON, chief town of Frontenac co., Ontario, Canada; at the head of Lake Ontario, and at the mouth of Cataraqui creek, 161 miles by rail E. N. E. of Toronto. It has a number of handsome public buildings, and is the seat of the Royal Military College of Canada, of Queen's University, with museums and an observatory, and of the Royal College of Physicians and Surgeons and the Women's Medical College affiliated to it. Here also are a business college and a collegiate and training institute for teachers. The city has, besides excellent railway facilities, good water communication by the lake, the St. Lawrence, and the Rideau canal, which last connects it with Ottawa. It possesses a large, sheltered harbor, with an active trade, and strongly fortified; and, besides busy shipyards, has manufactories of locomotives and stationary engines, machinery, leather, boots and shoes, agricultural implements, wooden wares, etc. Kingston is the seat of an Anglican bishop and of a Roman Catholic archbishop. Its site was occupied by the old French fort of Frontenac. The town was the capital of Canada from 1841 to 1844. Pop. about 25,000.

KINGSTON, a borough of Pennsylvania, in Luzerne co. It is on the Susquehanna river and on the Lackawanna and the Lehigh Valley railroads. It is chiefly a residential place but has some important industries, including an adding machine factory, car and machine shops, and manufactories of hosiery. There are important coal mines in the vicinity. Pop. (1910) 6,449; (1920) 8,952.

KINGSTON-UPON-HULL, important English river-port, a parliamentary and municipal borough and county of itself; in the East Riding of Yorkshire on the Humber; here 2 miles wide, and here joined by the Hull. Pop. (1917) 246,557. The docks and basins, comprising an area of upward of 200 acres, have been constructed since 1774. Hull was one of the first ports in England to engage in the whale-fishery, an enterprise which has been abandoned; but its fisheries for edible fish employ, in conjunction with those of Grimsby, large fleets of boats, attended by steam auxiliaries. Hull is a principal steam-packet station, and ocean steamers ply regularly to many of the principal ports of Belgium, Holland, Denmark, Russia, Germany, and Scandinavia. Its home trade is also very extensive. It is the great outlet for the woolen and cotton goods of the midland counties. It is the chief entrepôt for German and Scandinavian oversea trade.

KINGSTON-UPON-THAMES, a town of England, County Surrey, on the right bank of the Thames, 12 miles from Hyde Park Corner. Its antiquity is proved by numerous Roman remains found in its vicinity, and the Saxon kings were crowned here from Edward the Elder to Ethelred II. The stone on which the kings were crowned is preserved within an iron inclosure near the market-place. In the neighborhood are Bushy and Richmond parks, and Hampton Court Palace. Pop. (1917) 40,000.

KINGSTOWN, a watering place in Ireland, noted for its fine harbor. Pop. about 17,000.

KING VULTURE, or KING OF THE VULTURES, a large vulture which re-

ceives its name from the alleged fact that when it is pleased to make its appearance on a carcass on which other vultures are at work, they meekly stop proceedings and look on without eating till the king vulture has gorged itself to satiety. The king vulture is found in South America. The Spaniards of Paraguay call it the white crow. Its plumage is milky-white; on its neck, which is naked, is blood-red skin. It is the *Sarcorhamphus papa.*

KING WILLIAM'S WAR, a war waged by Great Britain and its colonies in America against France and its Indian allies, in 1689–1697.

KINGWOOD, a kind of wood from Brazil called also violet wood. It is used for turning and cabinet work, and is beautifully variegated with violet streaks.

KINKAJOU (ka*ng*-kä-zhö'), a genus of carnivorous mammals, family *Procionidæ.* They have prehensile tails, with which they hang on to trees. They have some affinity to the lemurs, of which they are the partial representatives in the New World, where they occur in South America and in Mexico. The best known species is *Cercoleptes caudivolvulus,* which is about a foot long, with a tail of 18 inches. It feeds upon fruit, insects, and birds. It is seen in menageries, and is occasionally tamed as a pet.

KINO, a kind of gum, which exudes from certain trees, and is dried without artificial heat. There are four varieties imported into the United States, *viz.,* the East Indian or Malabar kino from *Pterocarpus marsupium;* Bengal or Butea kino from *Butea frondosa;* African or Gambia kino from *P. erinaceus;* and Australian, Botany Bay, or Eucalyptus kino from *Eucalyptus rostrata.* It consists of dark red angular fragments, rarely larger than a pea. In its general behavior kino closely resembles catechu, and yields by similar treatment the same products. It is administered in medicine as an astringent. Also the insipissated juice of various plants.

KINSALE, a municipal borough and seaport of County Cork, Ireland. In 1601, 3,000 Spaniards landed at Kinsale in order to fight for the O'Neill confederacy. Here James II. landed on March 12, 1689, and here he re-embarked in July, 1690. In the following October the fort was captured by Marlborough. Pop. about 4,000.

KIOSK, a kind of open pavilion or summer-house, constructed of wood, straw, etc., and supported on pillars, surrounded by a balustrade. They are used in gardens, parks, etc., and in Paris and other continental cities as depots for the sale of papers.

KIOTO, for over 1,000 years the capital of Japan; situated on a flat plain about 26 miles inland from Ozaka. A high range of hills to the E. separates this plain from Lake Biwa, and on these some of the finest temples connected with the city are built. At the N. end are situated in an inclosure, the plain wooden buildings where the emperors of Japan dwelt so long in seclusion. The Honganji temples of the Monto sect of Buddhists, and the center of the Buddhist faith in Japan, rise at the S. end of the city. The pottery, porcelain, crapes, velvets, and brocades of Kiōto are highly esteemed; its embroideries, enamels, and inlaid bronze-works, are marvels of skillful handicraft. Pop. about 550,000.

KIOWAN, a linguistic stock of North American Indians of which but one tribe, the Kiowa, remains. They lived near the head waters of the Upper Platte and were very aggressive.

KIPCHAKS, a Turkish people, who in the 11th century were settled in the steppes of Southeast Russia, between the Ural and the Don, N. of the river Kuma. After the death of Genghis Khan, one of his four sons, Batu, conquered (1238–1243) nearly all Central and Southern Russia, and founded the great empire of the Golden Horde or the Kipchaks, fixing his magnificent camp on the Volga. The Golden Horde and the E. branch, the White Horde or Eastern Kipchak, were united about 1378; but this joint empire was broken up by Tamerlane in 1390–1395. Out of the fragments were formed the small khanates of Astrakhan, Kazan, the Crimea, etc., all of which were eventually absorbed by Russia. The modern descendants of the Western Kipchaks are the Tartars of Kazan, Astrakhan, the Crimea, etc.

KIPLING, RUDYARD, an English author born in Bombay, Dec. 30, 1865. He was educated in England, and in 1882 went out to India and joined the staff of the "Civil and Military Gazette," Lahore, for which paper his earlier tales were written. He depicted Anglo-Indian and military life in "Soldiers Three," "Black and White," "Plain Tales from the Hills," "Story of the Gadsbys," "Life's Handicap," etc. "The Naulakha," published in 1891, was written in collaboration with Wolcott Balestier. "Many Inventions," a collection of stor-

ies, appeared during 1893. In 1894 "The Jungle Book" was published, followed by "The Second Jungle Book." His first book of verse, "Barrack Room Ballads," appeared in 1892, and in 1896 another volume, "The Seven Seas." In

RUDYARD KIPLING

1897 he published "Captains Courageous," in 1898, "The Day's Work," in 1900 "From Sea to Sea"; and in 1901 "Kim." Among his most popular poems are: "The Vampire," "Recessional," "The Truce of the Bear," and "The White Man's Burden." Of his more recent works may be mentioned, "Five Nations" verse: "Traffics and Discoveries" (1904); "Rewards and Fairies" (1910); "The Harbor Watch" (1914); "France at War" (1915); "Tales of the Trade" (1916).

KIRBY, WILLIAM FOSGATE, United States Senator from Arkansas, born in Miller co., Ark. in 1867. He was educated in the public schools and studied law at Cumberland University. He began the practice in 1885. He was a member of the Arkansas House of Representatives in 1893 and again in 1897. From 1899 to 1901 he was a member of the State Senate. In 1904 he compiled the laws of the State. He was Attorney-General of Arkansas in 1907-1908 and was defeated for the nomination for Governor in the latter year. From 1910 to 1918 he was Associate Justice of the Supreme Court of Arkansas. After having been defeated in the primary election for Senator in 1914, he was elected in 1916 to fill out the unexpired term of James P. Clarke. He was a Democrat in politics. He was defeated for renomination in 1920.

KIRGHIZ (kēr'gēz), a nomadic Mongol-Tartar race, numbering in its various branches about 3,000,000, and inhabiting the steppes that extend from the lower Volga and the Caspian Sea in the W. to the Altai and Thian-Shan Mountains in the E., and from the Sea of Aral and the Syr Daria in the S. to the Tobol and Irtish on the N. The Kirghiz are a slow, sullen people, small in stature, bad walkers, but born riders. Their food is chiefly mutton and horseflesh, and their drink the nourishing fermented mare's milk called *koumiss.* They dwell in a *yurt* or semi-circular tent, the wooden framework of which is covered with cloth or felt. Agriculture is almost unknown; their possessions are in sheep, horses, and camels, and their manufactures consist of cloth, felt, carpets, leather, etc. They profess Mohammedanism. Most of the varied Kirghiz tribes are, at least nominally, under Russian government.

KIRIN, the central province of Manchuria, in area about 115,000 square miles. The western part is mountainous, some of the peaks reaching from 8,000 to 10,000 feet above sea-level. The eastern portion is a very level plain stretching to the sea coast. The mountains abound in tigers, wild-boars and panthers, while the eastern part is a very fertile plain producing millet, maize and barley. Pop. about 2,500,000.

KIRK, JOHN FOSTER, an American author; born in Frederickton, N. B., March 22, 1824; educated at Halifax, and settled in Boston, U. S. A., 1842. He wrote for "The North American Review"; "The Atlantic Monthly," and other periodicals; removed to Philadelphia, Pa., in 1870, where he was editor of "Lippincott's Magazine" till 1886; and was lecturer on history in the University of Pennsylvania in 1885–1888. He is the author of "History of Charles the Bold"; and editor of the complete works of William H. Prescott, and "Supplement" to "Allibone's Dictionary of Authors." He died in 1904.

KIRKDALE CAVE, in the vale of Pickering, Yorkshire, England, is famous for the numerous remains of Tertiary mammals which have been found in it. It was discovered in 1821.

KIRK-KILLISSEH, a town located in what was formerly European Turkey but now belonging to Bulgaria. About 35 miles northeast of Adrianople. The Bulgarians won a notable victory over the Turks here in October, 1912, but the city was later re-captured by Turkey in July, 1913. The Turks were finally ousted in 1919 by the victory of the Entente allies.

KIRKLAND, JOSEPH, an American author; born in Geneva, N. Y., Jan. 7, 1830; removed to Chicago, Ill., in 1853; entered the volunteer service at the outbreak of the Civil War, serving as private, lieutenant, and captain of the 12th Illinois Volunteer Infantry; was promoted major in 1863; and served in the Army of the Potomac. After the war he engaged in mining, law practice, and later in literary work. His publications include: "Zury, the Meanest Man in Spring County" (1887); "The Captain of Company K" (1891); with Caroline Kirkland, "The Chicago Massacre of 1812"; and "The Story of Chicago" (1892–1894). He died in Chicago, Ill., April 29, 1894.

KIRKSVILLE, a city of Missouri, the county seat of Adair co. It is on the Wabash and the Quincy, Omaha, and Kansas City railroads. It is the center of an important agricultural and coal mining region. The chief industry is the manufacture of shoes. There is a court house, a government building, and a State normal school. Pop. (1910) 6,347; (1920) 7,213.

KIRMOAB (kēr-mō'ab), a fortified city of Palestine, in the territory of Moab, mentioned in Isaiah xv: 1, was noticed in an act of the Council of Jerusalem in 536. In 1131, Fulk, Count of Anjou, and Latin king of Jerusalem, erected a castle here, which successfully resisted a siege by Saladin in 1183.

KIRWANITE, a soft, fibrous, green mineral, found in the basalt of Antrim, Ireland. Composition: A hydrated silicate of alumina, protoxide of iron and lime.

KISHINEFF, capital of the former Russian province of Bessarabia, now part of Rumania, on a tributary of the Dneister. It came into the possession of Russia in 1812. Fruit, the vine, and tobacco are grown; and tobacco and flour are manufactured. Kishineff is an important trading center for Bessarabian native products. In 1903 the town was the scene of a massacre of the Jews. Pop. about 130,000.

KISHON, a river in Palestine. Here Elijah slaughtered the priests of Baal and Deborah and Barak defeated Sisera.

KISSINGEN, a watering-place of Bavaria, Germany, on the Saale, 30 miles N. of Würzburg. The springs, five in number, and all saline, contain a large quantity of carbonic acid gas, and are used both internally and as baths.

KISTNA, a river of Southern India, rises in the Western Ghâts within 40 miles of the Arabian Sea, at a height of 4,500 feet, and, flowing E. across the peninsula, falls into the Bay of Bengal after a course of 800 miles. The river forms for a considerable distance the boundary between the Nizam's dominions and Madras presidency, and has a delta extending 100 miles inland.

KIT-CAT CLUB, a society formed in London about 1700, consisting of 39 noblemen and gentlemen favorable to the succession of the House of Hanover, and whose ostensible object was the encouragement of literature and the fine arts. Jacob Tonson, an eminent publisher, was founder and secretary; and, not to mention dukes and earls, it included Sir Robert Walpole, Vanbrugh, Congreve, Addison, Steele, and Garth. Before the club was dissolved (about 1720) each of the members presented to Tonson his half-length portrait, painted a uniform size, by Sir Godfrey Kneller. Hence the term is now applied generally to any portrait of kit-cat size—*i. e.*, about 36 inches long by 28 or 29 wide.

KITCHEN MIDDENS, refuse heaps, or shell mounds—the name given to what were formerly considered to be raised beaches on the coast of Denmark, but which are now proved to have been deposited by early man. It was first observed by Steenstrup that, in these supposed beaches, the shells belonged entirely to full-grown or nearly full-grown individuals; that they consisted of four species—the oyster, the cockle, the mussel, and the periwinkle—which do not live together. The discovery of flint implements and of bones bearing the marks of knives made it evident that these beds were the sites of ancient villages, the population of which lived principally on shell-fish, but partly on the produce of the chase. Kitchen middens are by no means limited to Denmark. They exist in England, in Australia, in Tierra del Fuego, in the Malay Peninsula, and in North and South America.

With regard to the time when these kitchen middens were formed, Sir John Lubbock dates them from the early part of the Neolithic Stone Age.

KITCHENER OF KHARTUM, HORATIO HERBERT, LORD, a British military officer; born in 1850. Educated at the Royal Military Academy, Woolwich, he joined the Royal Engineers, and was employed for some time in and after 1874 on the Palestine Surveys. He served, having volunteered, as a major of cavalry in the Egyptian army in 1882, with the Nile Expedition in 1884, and became governor of Suakin in 1886. From 1888 till 1892 he held the rank of adjutant-general in the Egyptian army, and in the latter year was appointed Sirdar. After the taking of Dongola, in 1896, he

KITCHENER OF KHARTUM

organized the final advance against the Khalifa, which resulted in the latter's utter defeat at Omdurman in September, 1898. For this he was awarded a peerage, as Baron Kitchener of Khartum and of Aspall, in the county of Suffolk. In 1899 he was appointed chief of staff in the South African campaign. Commander-in-chief in India 1907. British resident at Cairo 1911. In 1914 at the outbreak of the Great War he was appointed Secretary for War and through his efforts and the methods he inaugurated the British army was raised from 160,000 men to 5,000,000. He lost his life in 1916 when the "Hampshire" which was carrying him to Russia was sunk by a mine.

KITCHENER, town and county-seat of Waterloo co., Ont., Canada; formerly called Berlin; on the Grand river, and the Grand Trunk railway, 62 miles W. of Toronto. It has manufactories of furniture, leather, boots and shoes, pianos and organs, buttons, gloves, etc.; excellent sewerage system, water works, street railway, and gas and electric light plants; a Roman Catholic college, 22 churches, and several daily, weekly, and monthly periodicals. Pop. (1920) 21,052.

KITCHIN, CLAUDE, member of Congress from North Carolina, born in Scotland Neck, N. C., in 1869. He graduated from Wake Forest College in 1888 and at once began the study of law. He was admitted to the bar in 1890. He was elected to Congress in 1911 and was successively re-elected to the 64th and 66th Congresses and as such had charge of the chief financial measures passed during the war.

KITE, a name applied to very active, long-winged, small-footed *Falconidæ*, with rather short beaks, never truly notched like those of falcons. They fly strongly and gracefully. The typical genus is *Milvus*, confined to the Old World, and represented by half a dozen species. Of these the common or red kite, the Anglo-Saxon *Gled* or *Glead*, used to be common in Great Britain, but is now very rare. The bird measures two feet in length and is predominantly rufous. It is generally distributed in Europe and round about the Mediterranean shores. Its nest is built on a tree and made up of sticks and rubbish. The eggs (three) are laid in April or May, and have a dull-white or pale-blue ground, with spots or blotches of reddish brown. The black kite (*M. migrans*) has been recorded in Great Britain; the pariah kite (*M. govinda*) of India is a useful scavenger; *M. isurus* inhabits Australia. Under the title kite are also included the black-winged kites (*Elanus*) of both hemispheres; the beautiful swallow-tailed kite (*Elanoides forficatus*), occurring in the warmer parts of North America; the hook-billed kite (*Rostrhamus*) of South America and Florida, feeding, curiously enough, on fresh-water snails; and the large bee-kite or honey buzzard (*Pernis apivorus*), inhabiting Europe and Africa.

KITE, a wind toy, controlled by a string. As a plaything the kite has been known since 400 B. C., and in its familar form of two crossed sticks covered with paper, and balanced with a tail of string, on which are tied bits of cloth or paper, is a common sight. Kites were first employed in aid of science in 1749, by Dr. Alexander Wilson and Thomas Mellville,

of Scotland, who by means of a thermometer attached to a kite were able to take temperatures above the earth's surface. Franklin's experiments with electricity by means of a kite and key are familiar to everyone. In more recent times kites are being made to serve, not only the peaceful ends of science, but the needs of modern warfare. The first improvement was to make a tailless kite, and this was perfected by Mr. Eddy.

In 1895 Captain Baden-Powell, of England, weighing 150 pounds, was enabled to hoist himself 100 feet in the air by a tandem of five kites. Mr. Eddy has done much to develop tandem kite flying. In 1897 he made a tandem of nine Eddy-Malay kites on a cord two miles long, with an elevation of 5,595 feet, the same being kept up for 15 hours. At Blue Hill Observatory, near Boston, this height was exceeded, the tandem of seven Malay and two Hargrave kites, with an area of 170 feet, rising 8,740 feet above Blue Hill, or 9,375 feet above sea-level. Piano wire has been found preferable to cord, having greater tensile strength and presenting less surface to the wind. In the United States weather bureau parakites are used for the purpose of recording the velocity of the wind, and the humidity and temperature at high altitudes, by the meteorograph. The parakites may be put to several uses in time of war. They can, by means of colored electric lights or lanterns controlled by the cord or electric wire, convey signals to the troops, or they may be made to drop explosive substances on the heads of the enemy. Photographs may be taken by means of a camera fastened on the frame of a kite and operated by a cord. They were not much employed in the World War, photographs made from airplanes being more accurate.

KITTATINNY MOUNTAINS, sometimes called the BLUE MOUNTAINS, an extensive range of mountains in the United States, which can be traced with but slight breaks from Ulster co., N. Y., through New Jersey, Pennsylvania, Maryland, Virginia, North Carolina and Georgia, into Alabama. They are over 800 miles in length, with an elevation of from 800 to 2,500 feet.

KITTIWAKE, a gull, *Larus tridactylus*, so called because the fourth toe is only a small tubercle without any projecting horny nail or claw. Length, 15½ inches; head, neck and undersurface white; back and wings, French gray; legs short and dusky; toes and interdigital membranes dusky. Found in the highest latitudes and as far S. as Tripoli.

KITT'S, ST., or SAINT CHRISTOPHER, an island of the Leeward group, West Indies, belonging to Great Britain; area about 100 square miles; surface, diversified, a mountainous ridge extending through the center from N. to S., and at Mount Misery (an extinct volcano), rising to an elevation of 3,711 feet. The soil is very fertile, and produces all the tropical fruits. Capital, Basseterre. Discovered by Columbus in 1493. Pop. about 30,000.

KIU-KIANG, a seaport of China, province Kiangsi, on the S. bank of the Yang-tse-kiang. It derives importance from its connection with the green-tea districts. The port was opened to foreign trade in 1862. Pop. about 50,000.

KIU-SIU, one of the three principal islands of Japan, separated from Korea by the Strait of Korea, and from Hondo by the Strait of Sikoku. Nagasaki is situated here.

KIZIL-IRMAK, the Turkish "Red River," a river known to the ancients as the Halys, the principal river of Asia Minor. Rising in the E. of the peninsula, it flows in a circuitous route for about 500 miles, and enters the Black Sea near Sinope.

KIZIL-KUM ("Red Sands"), a sandy desert in Russian Turkestan, between the lower courses of the Amu-Daria and Syr-Daria. They stretch S. E. from the Sea of Aral, and rise from an elevation of 150 feet at the sea to 2,000 toward Bokhara. N. E. of the Caspian stretches the Kara-Kum "black sands" desert, a former bed of the sea.

KLAMATH (klă'mat) **LAKE**, a body of water in Oregon, at the E. base of the Cascade Range; overlaps the S. boundary of the State into California. The lake is about 44 miles long, by 6 to 14 miles wide. It consists of two considerable bodies of water, connected by a narrow strait less than 2 miles wide. Klamath river is the outlet, and issues from the S. end, or Lower Klamath Lake.

KLAUSENBURG (Hungarian Kolozvár), one of the chief cities in Transylvania; 95 miles E. by S. from Grosswardein. It consists of the inner town, formerly fortified, and of five suburbs. Here are a university, and a Unitarian College, and numerous other educational establishments. The town possesses the national museum, with antiquities, scientific collections, and a library. Klausenburg was captured by the Hungarians under Bem on Christmas day, 1848. Machines, oil, and spirits are manufactured. Pop. about 60,000.

KLAUSTHAL, the chief mining town of the Northern Harz Mountains, Germany; on a bleak plateau (1,985 feet), 25 miles N. E. of Göttingen. The ore miles are silver, lead, copper, and zinc. There is a good mining academy, with library, museum, and laboratory. Zellerfeld, divided from Klausthal by a brook, is also a mining center. The mines are the property of the Prussian government. Pop. 8,000. The men are almost exclusively employed in the mines and smelting works.

KLÉBER, JEAN BAPTISTE, a French general; born in Strassburg in 1754. He was originally an architect, but chose the military profession, and en-

JEAN BAPTISTE KLÉBER

tered the Austrian service, (1776 to 1783). When the French revolutionary war broke out, he entered as a grenadier into a volunteer regiment, and rose rapidly into command. He displayed great skill and bravery at the siege of Mentz, after which he was employed in La Vendée; but the sanguinary scenes there so disgusted him, that he obtained his recall, and was engaged in the army of the North, defeated the Austrians, took Mons, and drove the enemy from Louvain. He also captured Maestricht, and contributed to the splendid successes of 1795 and 1796 on the Rhine. The Directory gave him command of the army of the Sambre and Meuse, which he resigned to Hoche, and retired. Napoleon I., however, who valued his talents, prevailed upon him to join the expedition to Egypt. He was wounded at the battle of Alexandria, but he marched into Syria, where he commanded the corps of observation during the siege of Acre, and defeated the Turks in several actions. When Napoleon left Egypt, he appointed Kleber commander-in-chief of the army. He captured the City of Cairo, and made an alliance with Murad Bey. He was assassinated by an Arab, June 14, 1800.

KLEENBOC, a pigmy antelope found at the Cape of Good Hope. It is about a foot high at the shoulder, with small erect black horns, somewhat approaching at the tips.

KLEIST, HEINRICH VON, a German dramatist; born in Frankfort-on-the-Oder, Oct. 18, 1777. At first he followed the family profession and entered the army; but left it in 1799 for literature. His best plays, such as "The Prince of Homburg" and "The Broken Pitcher" possess sufficient vigor and fidelity to life to make them popular even at the present day. The best of his tales is "Michael Kohlhaas," a story of Brandenburg in the Middle Ages. He shot himself, after first shooting a woman whom he loved, and who like him was weary of life, on the bank of Lake Wan near Potsdam, Nov. 21, 1811. His works did not gain recognition till after his death.

KLEPHTS (klefts), properly "robbers," the name formerly given to those Greeks who kept themselves free from the Turkish yoke in the mountains, and carried on a pepetual war against the oppressors of their country.

KLEPTOMANIA, a supposed species of insanity manifesting itself in a desire to pilfer.

KLIPSPRINGER, a species of antelope, about equal in size to the chamois, and resembling it in habits, found in the highest mountainous districts of South Africa. It is of a yellowish-gray color, and the hair is long, and stands out from the skin so as to make a rough fur. The flesh of the klipspringer is particularly esteemed; the hair is also valued for stuffing saddles.

KLONDIKE, THE, a river which enters the Yukon, the principal river of the Northwest Territory, Canada, 45 miles below the mouth of Sixty Mile, and 15 miles above old Fort Reliance. The word is now applied to the region surrounding the Klondike river and its tributaries.

As early as 1862 gold was discovered in Alaska, but no especial notice was taken of it; 13 years later gold was found at the head of the Stikine river, in the S. E. part, about 300 miles N. of Fort Wrangel, and a rush was made to the fields. Fort Wrangel became a prosper-

ous town but as soon as the rich placer diggings were exhausted, men became discouraged, owing to the lack of stamp mills and the expense of working the quartz, and the mines were finally abandoned. In 1880, Juneau, a Frenchman, with a companion started out from Sitka and traveling N. discovered gold in a creek which they named Gold creek, and at the mouth of this creek founded a town first called Harrisburg, and later Juneau. In 1886 a rich find was reported on Stewart river, in the Yukon district, and the following year an expedition was sent out by the Canadian government, headed by George M. Dawson, which explored the Upper Yukon and reported the existence of an abundance of gold. The difficulties and hardships to be encountered in reaching the location were so great that but a few hundred miners attempted to seek their fortunes there. These, however, persevered and established Circle City on the Alaska side of the boundary. It was not till 1897 that the wonderful riches of the Klondike region were made known through George McCormick, or Cormack, who went from Illinois to Alaska in 1890 and there married an Indian squaw. In 1897 he located at the mouth of the Klondike river for the purpose of salmon fishing, but this not proving profitable moved up the river till he came to Bonanza creek which he began to explore for gold. He found large quantities of paying dust and located an extensive claim. The news spread and miners poured into the newly found gold fields, and stories of sudden riches spread over the United States. Through fall and winter of 1897 the mad rush for the Klondike region continued. Juneau, Dyea and Skaguay, sprang into sudden prominence and rapidly added to their population, while Dawson City in which the first hut was built in September, 1896, in 1901 had grown to a prosperous city with handsome residences.

This section of country is not far removed from the Arctic regions. For seven months of the year intense cold prevails, varied by furious snow storms which begin in September and occur at intervals till May. By October 20, ice is formed over all the rivers. The ground for the better part of the year is frozen to the depth of from 3 to 10 feet, and the only way to get at the gold is to thaw the earth by building a fire and afterward break up the soil with a pick. See ALASKA.

KLOPSTOCK, FRIEDRICH GOTTLIEB (klop'stok,), a German poet; born in Quedlinburg, July 2, 1724. In freeing German poetry from the exclusive reign of the Alexandrine verse, he was the founder of a new era in German literature. His great epic "Messiah" (1748–1773), at first partly written in prose and changed afterward to hexameters, made him famous. His most finished work, however, was doubtless his "Odes." Schiller and Goethe were artistically indebted to him. He died in Hamburg, March 14, 1803.

KLUCK, ALEXANDER VON, a German general. Born at Münster in 1846, he enlisted in the Prussian army in time to serve in the seven weeks' war against Austria in 1866. In the Franco-Prussian War he served with great gallantry being twice wounded. He was made a general of infantry in 1906. At the opening of the World War he was given command of a group of Army Corps composing the extreme right wing of the German Army invading France. Apparently with irresistible force he swept the English and French forces in front of him until he was considerably S. W. of Paris. The check given the other German armies on the Marne left von Kluck almost surrounded, a position from which he extricated himself by hard fighting and superior strategy. When the French and English attacked him in his intrenched positions on the Aisne they received a severe check. His later career in the Army was relatively unimportant.

KNAPP, MARTIN AUGUSTINE, an American jurist and public official, born at Spafford, N. Y., in 1843. He graduated from Wesleyan University in 1868. He was admitted to the bar in the following year. He served as corporation counsel for the city of Syracuse, from 1877 to 1883. In 1891 he was appointed a member of the Interstate Commerce Commission and was re-appointed successively by Presidents Cleveland and Roosevelt. From 1898 he was chairman of the commission. He was appointed circuit judge in 1910. He served as mediator in several disputes between the public and the railroads. He was a member of several economic societies.

KNAPSACK, a soldier's or tourist's case or wrapper for clothes, etc., to be carried on the back during a march; a tourist's or traveler's satchel.

KNAPWEED, a popular name given to some species of *Centaurea*. *C. nigra*, black knapweed; and *C. scabiosa*, greater knapweed, are common weeds, being rough, hardy herbaceous plants growing by waysides, etc.

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THE EMPRESS JOSEPHINE. A STATUE IN THE ISLAND OF MARTINIQUE

Enc. Vol. 5 — p. 356

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IN THE CARRARA MARBLE QUARRIES, ITALY

Photo by Frank Hurley © *Underwood & Underwood*

RAMPART BERG, A TITANIC MASS OF ICE THAT MENACED SHACKLETON'S VESSEL IN HIS ANTARCTIC EXPEDITION

Photo, Brown Bros.

A FAMILY ON THE ISLAND OF JUAN FERNANDEZ, MADE FAMOUS BY THE STORY OF ROBINSON CRUSOE

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A TOWN ON THE GARDA SEA, IN THE TYROL, ITALY

© Ewing Galloway

STEEL BARGES LOADING AT KANSAS CITY SHIPMENTS FOR ST. LOUIS

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MINERS IN CHILKOOT PASS, BOUND FOR THE KLONDIKE GOLD FIELDS

© *Underwood & Underwood*

DOCKS OF LIVERPOOL, ENGLAND

KNAUS, LUDWIG (knous), a German painter; born in Wiesbaden, Oct. 10, 1829. He studied at Düsseldorf under Karl Sohn and Schadow, but struck out a path for himself, painting subjects from everyday rustic life. In 1852–1860 he lived mostly in Paris and painted "The Golden Wedding," "The Baptism," and "The Setting-out for the Dance." In 1861-1866 he resided in Berlin. Among his paintings are "The Juggler," "His Highness on His Travels," "Cobbler Boy" and "Organgrinder." From 1866 to 1874 he lived in Düsseldorf, and painted the pictures on which his fame as a genre painter is most securely founded: "The Children's Feast," "The Funeral," "The Goose-Girl," "Brothers and Sisters," etc. Among his later pictures are "A Holy Family," "Bad Roads," "The Stubborn Model," "The Wisdom of Solomon," etc. He died Dec. 7, 1910.

KNEE, the articulation between the femur or thigh bone, above, and the tibia or shin bone below. A third bone, the patella, or knee cap, also enters into the structure of this joint anteriorly.

The chief movements of this joint are those of a hinge-joint—namely, flexion and extension; but it is also capable of slight rotatory motion when the knee is half-flexed.

KNEE CAP, or **PATELLA**, a sesamoid bone, developed in the single tendon of the *rectus, crureus, vastus externus,* and *vastus internus* muscles—the great quadriceps extensor muscle of the leg. It is heart-shaped in form, the broad end being directed upward, and the apex downward.

This bone is liable both to dislocation and fracture. Dislocation may occur either inward or outward; but it is most frequent in the outward direction. The displacement may be caused either by mechanical violence, or by too sudden contraction of the extensor muscles in whose conjoined tendon it lies; and is most liable to occur in knock-kneed, flabby persons. Except in one rare variety, the dislocation is capable of being reduced without any difficulty. Fracture of the patella may, like dislocation, be caused either by muscular action or by mechanical violence.

Fracture by violent muscular action, as when a person in danger of falling forward attempts to recover himself by throwing the body backward, is the more common of the two forms.

KNEIPP, SEBASTIAN, a German clergyman; born in Stefansried, May 17, 1821. He became a Roman Catholic priest in 1852. His attention was early drawn to the "water cure" which he advocated for years. This method was chiefly walking barefoot in dew-moistened grass. He died in Wörishofen, June 17, 1897.

KNELLER, SIR GODFREY, an English portrait painter; born in Lübeck, Aug. 8, 1648. He learned painting under Rembrandt and Ferdinand Bol. In 1674 he went to London, and, on the death of Sir Peter Lely in 1680, was appointed court-painter to Charles II. This office he retained during the reign of James II. and continued to fill it after the Revolution. In 1692 William III. knighted him, and in 1715 George I. made him a baronet. Kneller's best known productions are the "Beauties of Hampton Court" (painted by order of William III.), his portraits of the "Kit-Cat Club," and of nine sovereigns (Charles II. to George I. of England, Louis XIV., Peter the Great, and the Emperor Charles VI.). He painted avowedly for the love of money, and hence never did justice to the undoubted talent he possessed. He died in Twickenham, Nov. 7, 1723.

KNIGHT, a man admitted to a certain degree of military rank. Also one who holds a certain dignity conferred by the sovereign or his representative, and entitling the possessor to the title of Sir prefixed to his name. The dignity differs from that of a baronet in not being hereditary. Wives of knights are legally entitled to the designation of Dame, but are more commonly addressed as Lady.

KNIGHT, AUSTIN MELVIN, an American naval officer, born at Ware, Mass., in 1854. He graduated from the United States Naval Academy in 1873, and was commanding ensign in the following year. He served on the Asiatic Station in 1874-1875, and from 1876 to 1878, was at the Naval academy. He followed this with service on the European and South Atlantic stations, and from 1885 to 1889 was in charge of the ordnance proving ground at Annapolis. After additional service at sea, he was made superintendent of the Naval Academy from 1892 to 1895. During the Spanish-American War, he commanded several vessels, engaged in the blockade of Cuba. From 1898 to 1901 he was head of the department of seamanship at the Naval Academy. From 1904 to 1907 he was president of the special board on naval ordnance, and from 1913 to 1917 he was commandant and president of the Naval War College. He was appointed commander-in-chief of the Asiatic Fleet with the rank of admiral, in April, 1917. He retired from active service in December, 1918. He wrote "Modern Seaman-

ship" (1901), and contributed many articles to magazines.

KNIGHTHOOD, ORDER OF, a duly organized and constituted order or body of Knights. They are of two kinds, the first consisting of associations or fraternities, possessing property and rights of their own, as independent bodies; the second honorary associations established by sovereigns within their own dominions. To the first class belong the Knights Templars and Hospitallers; to the second those numerous orders established in different countries, as the Order of the Holy Ghost, the Order of the Golden Fleece, etc., in European countries, and the Orders of the Bath, the Garter, St. Patrick, St. Michael, and St. George, the Thistle, etc., in Great Britain. Each order has its appropriate insignia, generally including ribbon, collar, badge, or jewel and a star.

KNIGHTS AND LADIES OF HONOR, a fraternal beneficiary society founded in the United States in 1877.

KNIGHTS OF COLUMBUS, a fraternal order, restricted to male members of the Catholic Church, established in New Haven, Conn., in 1882. The purposes are declared to be to develop a practical Catholicity among the members, to promote education and charity, and, through an insurance department, to furnish at least temporary financial aid to the families of deceased members. The organizers in 1882, as a Supreme Committee, instituted the first subordinate council, San Salvador Council, No. 1, New Haven. From that time on subordinate councils were organized in the different cities and towns throughout Connecticut, and in 1885 the order began to be extended beyond the borders of that state. The order had in force April 1, 1918, insurance certificates of $132,344,151.33, the reserve fund amounting to $8,532,967.89. In 1917 the ratio of assets to liabilities was 132.35 per cent.

The order is now established in every state and territory of the United States, every province of Canada, in Newfoundland, Alaska, the Philippines, Cuba, Porto Rico, Mexico, the Canal Zone, and Panama. The order has endowed at $50,000 a chair of American History at the Catholic University of America; and fifty perpetual free scholarships at the same institution. It aided in relief work in San Francisco earthquake, Kansas flood, Chelsea fire, Ohio flood and Halifax disaster.

The organization was especially active during the World War in relief work, both in France and the United States. Its work was under the control of the commission of war activities, of which William J. Mulligan was Chairman. The Over Seas Director was William P. Larkin.

The Knights of Columbus organized canteens and huts where the soldiers were able to resort for social and other activities both in the training camps and in France. In the United States 150 such rest stations were maintained, and in France 45. The total number of secretaries amounted to 350. On Sundays, mass was held in the huts, 100 Chaplains being assigned to the religious phase of the work for the special comfort of the Catholic soldiers.

It is worthy of note that on the Jewish Sabbath, the Knights of Columbus Huts, both at home and abroad were thrown open to the soldiers of the Jewish faith, in order that they might enjoy religious service according to their belief.

Before the close of the war the Catholics of the United States had contributed over $50,000,000 a year for the work of the Knights of Columbus. During the first six months of 1918, over $7,000,000 was spent.

See RELIEF, WAR.

The work of lectures to non-Catholics has been taken up with success and was carried to great lengths during the war. The series of lectures delivered by Bishop Keane of Cheyenne, Wyo., in Denver in 1909, inaugurated the work. At Cedar Rapids, Ia., 85 per cent. of the audience, at the lectures under the auspices of the Knights of Columbus, was non-Catholic. The Knights of Columbus were largely instrumental in the erection of a memorial to Christopher Columbus, in the City of Washington, by the United States Government. "Columbus Day" (October 12) was instituted largely through the efforts of the order. In August, 1920, a commission sent by the Knights of Columbus unveiled a statue of Lafayette presented by the order at Metz and presented a jewelled K. C. marshal's baton to Marshal Ferdinand Foch. Mr. William P. Larkin, the Over Seas Director, was the orator of this occasion.

The total number of lodges in 1921 was 2085—the total number of members carrying insurance was 203,795. The total number of associate members was 511,078, making a grand total of members 714,873.

The total increase over the previous year in the associate members was 36,985, with an increase of all members of 121,725.

KNIGHTS OF LABOR, a national labor organization in the United States, founded in Philadelphia in 1869. It is to be distinguished from trades-unions as embracing all classes and kinds of labor, and extending, through its local assemblies, over the whole country. The first general assembly was held in 1878. In 1886 there were 730,000; in 1886 and 1887, however, the system of "boycotting" having been introduced, the business of the country was greatly disturbed, and since then the strength of the organization declined. At the convention of 1888 the total was admitted to have fallen below 500,000; and dissensions have since further weakened the body. It is estimated that the membership now (1920) is less than 100,000.

KNIGHTS OF PYTHIAS, a secret fraternal order organized at Washington, D. C., in 1864, and numbering in the United States in 1920 746,034 members.

KNIGHTS OF THE MACCABEES, a benevolent association, founded in 1881. In 1917, the membership was 722,075; 5000 sub-lodges, governed by nine Grand Lodges and one Supreme Lodge.

KNIGHTS OF THE ROUND TABLE. See ROUND TABLE, KNIGHTS OF THE.

KNIGHTS TEMPLAR, a degree or order of modern Freemasonry ranking in dignity above the Blue Lodge and the Royal Arch Chapter. The orders conferred in a commandery of Knights Templar are Red Cross, Knight Templar, and Knight of Malta. A Mason to obtain these orders must be a Master Mason and Royal Arch Mason in good standing. See FREEMASON.

KNOBLOCK, EDWARD, an American playwright. He was born in New York in 1874, and was educated at Harvard. In 1896 he went to Paris and studied the drama there for a year, later going to London where he wrote plays. The first of his works to be produced was an adaptation from the French, "The Partikler Pet." Others have been: "The Shulamite" (with Claude Askew); "The Cottage in the Air," "The Faun," "Kismet," "Milestones" (with Arnold Bennett); "Discovering America," "The Headmaster" (with Wilfred T. Coleby); "My Lady's Dress," "Marie-Odile," "Mouse," "Paganini," "Home on Leave." In 1916 he became a naturalized British subject and lieutenant in the British service.

KNOT, a nautical synonym for the geographical mile. The length of the geographical mile, or knot, or nautical mile (as it is also called) is 6,080 feet. Hence when a ship has gone 1 knot it has gone 1.1515 statute miles, or, what is nearly the same thing, a ship which is running 13 knots an hour is traveling at the same speed as a railway train which is going 15 miles an hour. The name is derived from the knots tied on the appendages of a ship's log line.

KNOT, a wading bird, which has the breast deep chestnut in summer and white in winter, and the back dark with fulvous spots in summer and ashy-gray in winter. It breeds within the Arctic circle, from which it migrates in autumn to the Eastern Hemisphere, as far even as the Cape and Australia.

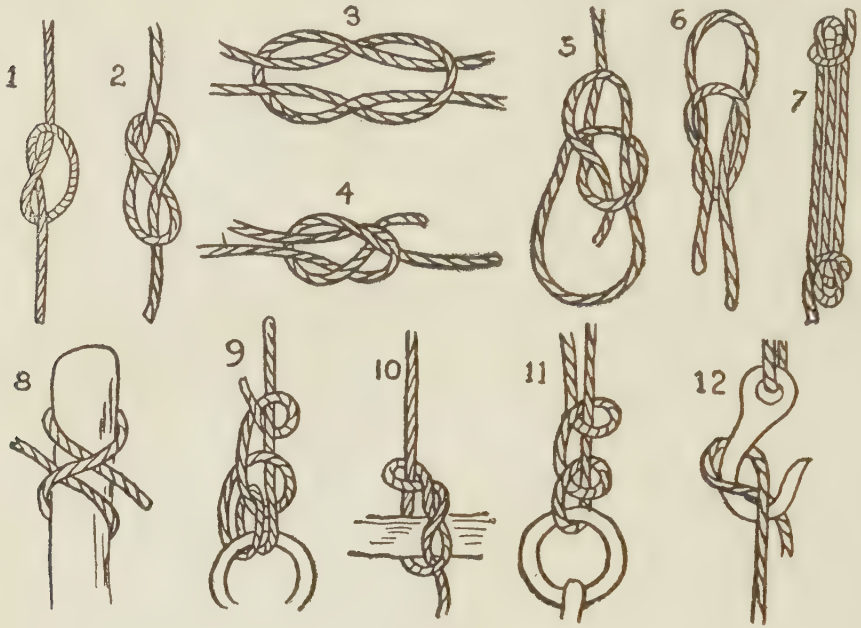
KNOT GRASS, a prostrate plant, with internodes, narrow leaves, silvery stipules, and white, pink, crimson, or green inconspicuous flowers, clustered in the axils of various leaves. It is common in fields and waste places.

KNOTS and SPLICES include all the various methods of tying, fastening, and joining ropes or cords. From 150 to 200 different kinds of knots may be enumerated, mostly used on shipboard, though almost all occupations using ropes or cordage have special kinds of knots adapted to their different requirements.

"Splicing" is the process employed to join two ropes when it is not advisable to use a knot. The three chief varieties of the splice are the short splice, the long splice, and the eye splice. The short splice is made by unlaying the ends of two ropes for a short distance and fitting them closely together; then, by the help of a marlinspike, the ends are laced over and under the strands of the opposite rope. When each strand has been passed through once, half of it is cut away and the remainder passed through again; half of the remainder being also cut away, it is passed a third time, and, when all the strands are so treated, they are hauled taut and cut close. This reducing the thickness of the strands tapers off the splice. The long splice is employed when the rope is used to run through a block, as it does not thicken it. The ends of the two ropes are unlaid for a much longer distance than for the short splice, and similarly placed together. Then one strand is taken and further unwound for a considerable distance, and its vacant place filled up with the corresponding strand of the other rope, and the ends fastened as in the short splice. Other two of the strands are similarly spliced in the opposite direction, and the remaining two fastened at the original joining place. The eye splice is, as the

term implies, used to form an eye, or round a dead eye.

To prevent a rope fraying at the ends a variety of methods are employed, the simplest being to serve or whip the end with small cord.



KNOTS

1. Overhand Knot.
2. Figure Eight Knot.
3. Reef Knot.
4. Weavers' Knot.
5. Bowline Knot.
6. Slip Knot.
7. Sheepshank Knot.
8. Clove Hitch Knot.
9. Fishermen's Bend Knot.
10. Timber Hitch Knot.
11. Two Half Hitches.
12. Blackwall Hitch Knot.

KNOWLES, JAMES SHERIDAN, an Irish actor and dramatist; born in Cork, Ireland, May 21, 1784. He made his first appearance as an actor in 1806. Subsequently he taught elocution for several years at Belfast and Glasgow, and wrote for the stage. He abandoned dramatic work in 1845 from religious scruples, and later became well known as a Baptist preacher. Of his works only the tragedy of "Virginius," produced 1820, and the comedies, "The Hunchback" (1832) and "The Love Chase" (1837), have survived. Among his other dramas may be mentioned: "Caius Gracchus" (1815); "William Tell" (1825); "Alfred the Great" (1831); "The Wife: A Tale of Mantua" (1833). He died in Torquay, England, Nov. 30, 1862.

KNOWNOTHING, a member of a secret political association in the United States, organized for the purpose of obtaining the repeal of the naturalization law, and of the law which permitted others than native Americans to hold office. It started in 1853, and lasted two or three years. A society was formed in 1855 in opposition to the above, called Knowsomethings. Both bodies were absorbed into the two parties, Democrats and Republicans, at the presidential election in 1856.

KNOX, HENRY, an American military officer; born in Boston, July 25, 1750. He was distinguished as an adept in military science, and at the battle of Bunker Hill rendered valuable service to General Ward. He attracted the attention of Washington, who recommended him for the command of an artillery regiment. He particularly distinguished himself in the repulse of Cornwallis at Assunpink in 1777; at Princeton, and at the battle of Monmouth. For his signal service at Yorktown he was made Major-General. In 1785 he was appointed by Congress Secretary of War. He resigned from the Cabinet in 1795, retiring to private life. He died in Thomaston, Me., Oct. 25, 1806.

KNOX, JOHN, a Scotch religious reformer; born in Giffordsgate, near Haddington, Scotland, in 1505. A pioneer of Puritanism; prisoner of war, for 19

months confined in the French galleys; friend of Calvin and Beza; a preacher of sermons that moved their hearers to demolish convents; with a price on his head, yet never faltering; arrested for treason, an armed "congregation" at his heels; burned in effigy, for years a dictator—he spent his life forwarding the Reformation in Scotland. His great work, distinguished in Scottish prose, was his "History of the Reformation of Religion within the Realm of Scotland" (1584). His famous "Letter to the Queen Dowager" appeared in 1556; the "First Trumpet Blast against the Monstrous Regiment of Women"—inveighing

JOHN KNOX

against women taking part in the government, and which offended Queen Elizabeth—in 1558. He died in Edinburgh, Nov. 24, 1572.

KNOX, PHILANDER CHASE, an American lawyer; born in Brownsville, Pa., May 4, 1853; was graduated at Mount Union College, Alliance, O., in 1872; settled in Pittsburgh, Pa.; and was admitted to the bar there in 1875. He was appointed assistant United States district attorney for Western Pennsylvania; resigned after serving one year and engaged in the practice of his profession. On April 5, 1901, he was appointed Attorney-General of the United States by President McKinley to succeed John W. Griggs (resigned). Mr. Knox was a member of a number of clubs in Pittsburgh, New York, and Philadelphia; and in 1897 was elected president of the Pennsylvania Bar Association. United States Attorney-General 1901-1904, Senator for Pennsylvania (unfilled term) 1905. Elected for full term 1909. Secretary of State 1912, toured Latin-

PHILANDER CHASE KNOX

America to establish good relations with United States 1916. Senator 1917-1923. Author of "Future of Commerce" (1908); "International Unity" (1910); "Speeches" (1912).

KNOX COLLEGE, a coeducational non-sectarian institution in Galesburg, Ill.; founded in 1837; reported at the close of 1919. Professors and instructors, 36; students, 761. President, J. L. McConaughy.

KNOXVILLE, a city and county-seat of Knox co., Tenn.; on the Tennessee river and the Southern, Louisville and Nashville and other railroads; 111 miles N. E. of Chattanooga. It is at the head of steamboat navigation on the river; has a large trade in general commodities, and in logs and lumber particularly; is the center of important marble industries; and has sawmills, iron and nail works, car and railroad shops, and cotton and woolen mills. Among noteworthy institutions are the University of Tennessee, with an agricultural experiment station, Knoxville College for Colored Students (Unit. Pres.) with other institutions for higher education. Girls, East and West High Schools, li-

braries, the Eastern State Insane Asylum, State Institutions for White and Black Deaf Mutes, the Lawson McGhee Memorial, etc. The city was founded in 1792; chartered as a city in 1815; and was enlarged by incorporating West Knoxville and North Knoxville in 1888 and 1889 respectively. Pop. (1910) 36,-346; (1920) 77,818.

KNOXVILLE COLLEGE, an institution for higher education, at Knoxville, Tenn., founded in 1876. There were in the autumn of 1919, 500 students and 25 instructors. President, J. K. Giffen.

KNUCKLE JOINT, a joint in which a projection on each leg or leaf of a machine or implement is inserted in corresponding recesses in the other, the two being connected by a pin or a pivot on which they mutually turn. The legs of dividers and the leaves of butt-hinges are examples of the true knuckle joint. The term, however, is somewhat commonly applied to joints in which the motion is not confined to one place.

KNUR AND SPELL (called by Strutt "Northern Spell"), an old English game played with a ball, which is "risen" from a trap and hit with a bat made for the purpose. The ball, called the "knur," is made of wood, a little bigger than a walnut. The bat, called a "tripstick," as it is also used to spring the trap or "spell," consists of a piece of hard wood, 6 by 4 inches, and 1 inch thick (the pommel), attached to a supple handle from 3 to 4 feet long, which the player grasps with both hands, giving the full swing of his body with the stroke. The game consists of the cumulative distance of a given number of strokes, the player who has the greatest number of yards being the winner.

KNYSNA, a forest tract and elephant preserve, extending from the sea to the Outeniqua Mountains in Cape Colony, 150 miles W. of Port Elizabeth.

KOALA, the genus *Phascolarctos*, and specially *P. cinereus*, the native bear or native sloth of the Australian colonies. It is a tailless, but pouched animal, about two feet long, with a stout body and limbs, a small head, moderate-sized ears, well-developed feet, and ash-gray fur. It feeds on the tender shoots of the blue gum tree, which the natives climb to effect its capture.

KOBBE, GUSTAV, an American author; born in New York, March 4, 1857; was graduated at Columbia University in 1877 and at its Law School in 1879; and later engaged in newspaper and magazine work. He is author of "The Ring of the Nibelung" (1889); "Wagner's Life and Works" (1890); "My Rosary and Other Poems" (1896); "New York and Its Environs"; "Signora" (1906); "Wagner and His Isolde" (1905), "How to Appreciate Music" (1906); "Modern Women" (1916). He died in 1918.

KOBE, a port of Central Japan; on the W. shore of the Gulf of Ozaka, about 20 miles S. of that city. Pop. about 500,-000. The foreign settlement is finely laid out, and the town is one of the most attractive and prosperous in Japan. It has been open to foreign trade since 1868. Kobe has direct communication with Great Britain, Germany, Canada, and Australia.

KOBOLD, a spirit, differing from the specter in never having been a living human creature. It is the German correspondent of the English goblin, of which it is probably the origin. From it the metal cobalt derives its name. The kobold is said to be connected with a house or family, and always to appear in human shape. In the mines they are believed to appear, sometimes in the form of a blue flame, sometimes in that of a dwarfish child, and to point out rich veins.

KOCH, ROBERT (kō*h*), a German bacteriologist; born in Klausthal, in the Harz Mountains, Dec. 11, 1843. He studied medicine at Göttingen, receiving his doctor's degree in 1866. In 1879 he had begun his investigations of the causes of consumption, and on March 24, 1882, he announced the discovery of the tubercle bacillus before the Physiological Society of Berlin. In 1883 he was made a privy-councilor and placed in charge of the German expedition sent to Egypt and India to investigate the causes of cholera. This journey resulted in the discovery of the comma bacillus, or cholera germ, in May, 1884. He was rewarded with a gift of $25,000 by the government, and imperial titles and honors were showered upon him. In 1885 he was appointed a professor in the University of Berlin, the new chair of hygiene being created for him, and director of the Hygienic Institute. In 1901 he announced his conclusion that meat from tuberculous cattle may be safely eaten. He died May 27, 1910.

KOCHAB, a star of the third magnitude in Ursa Minor, "The Little Bear," and which in the time of Ptolemy was the actual pole-star.

KOCK, CHARLES PAUL DE (kōk), a French novelist and playwright; born

in Passy, France, May 21, 1794. He wrote a great number of novels that showed humor and observation describing Parisian lower class life of his time, and were emphatically realistic. Among the most popular were: "Georgette" (1820); "Gustave" (1821); "Monsieur Dupont" (1824); "Wife, Husband, and Lover" (1829); "The Man with Three Pairs of Trousers" (1840); "A Woman with Three Faces" (1859); "The Millionaire" (1867). He wrote also popular songs. He died in Paris, Aug. 29, 1871.

KOCK, PAUL HENRI DE, a French novelist and playwright, son of Charles Paul; born in Paris, France, April 25, 1819. He followed closely in his father's footsteps, producing numerous novels and plays, which however, never enjoyed the same popularity. Titles of some of his novels are: "The King of the Students and the Queen of the Grisettes" (1844); "Kisses Accursed" (1860); "Absinthe Drinkers" (1863); "The New Manon" (1864); "Mademoiselle Croquemitaine" (1871). He died in Limeil, April 14, 1892.

KOENIG, PAUL, captain of the merchant submarine "Deutschland" which crossed the Atlantic from Germany and arrived at Baltimore on July 10, 1916, with a cargo of dyestuffs. While in the United States he was interviewed by newspapermen, was even the recipient of vaudeville offers, was welcomed by mayor of Baltimore and officials. On August 2 he sailed on the return voyage, later making a second voyage and putting in at New London, Conn.

KOFU, a town in the province of Kai, Japan, located about 80 miles from Tokyo. The town has progressed rapidly in recent years having many buildings of the European style. The industries are silk-weaving, the polishing of rock-crystals found in the quarries nearby, and the making of wine. Population, about 50,000.

KOHATH, the son of Levi and father of the Kohathites, who was appointed to carry the ark and the sacred utensils of the tabernacle during the journeyings of the Israelites in the desert. (Ex. vi: 16–24; Num. iv: 4–15).

KOH-I-NÛR. See DIAMOND.

KOHLRABI, the turnip-stemmed cabbage, a variety of cabbage having a turnip-like protuberance on the stem just above the ground, which is the most edible part of the plant.

KOKOMO, city and county-seat of Howard co., Ind.; on the Wildcat river and at the intersection of several important railroad systems; 54 miles N. of Indianapolis. It is the farming trade center for a region within a radius of nearly 20 miles; is the principal city in the natural gas area of Indiana; and is principally engaged in agriculture, stock-raising, lumbering and manufacturing. It has a driven well water system, electric lights and street railroads, National and savings banks, the County Asylum and Orphans' Home, a public park of about 40 acres, public library, and high schools. Pop. (1910) 17,010; (1920) 30,067.

KOKO-NOR, or **KUKU-NOR**, a lake of Tibet, near the frontier of the Chinese province of Kan-su, fills a depression surrounded by mountains, and lies, according to Prjevalsky, 12,097 feet above the level of the sea. Its very salt waters, exquisitely blue in color, cover 66 miles by 40. It contains five islands, one with a Buddhist monastery.

KOKOONA, a genus of *Celastraceæ*. *K. zeylanica* is a tree with a pale-colored bark, found in the West Indies and in Ceylon. An oil is expressed from its seeds, which is used for burning in lamps, etc.

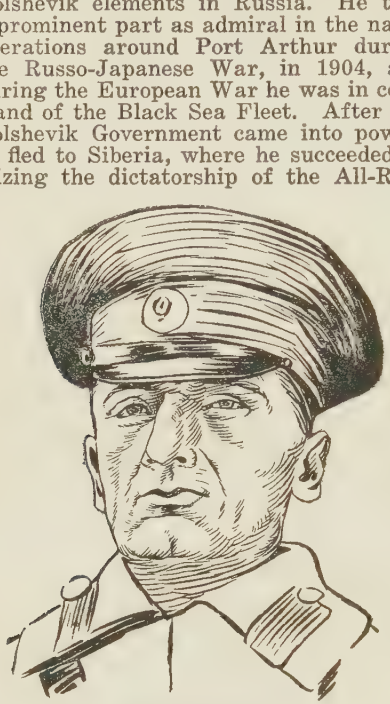
KOKRA WOOD, or **COCUS WOOD**, the wood of an Indian tree, *Lepidostachys Roxburghii*, which belongs to a very small natural order, *Scepaceæ*. It is imported into Great Britain in logs of six or eight inches in diameter, having the heart-wood of a rich deep brown color and very hard; and is much used in the manufacture of flutes and other musical instruments.

KOLA, a place of 649 inhabitants, but worthy of notice as the extreme N. town of European Russia. It is situated on the peninsula of Kola, is the capital of Russian Lapland, and has a capacious harbor.

KOLA NUT, the product of a tree whose habitat is a West African region stretching 500 miles from the coast into the interior, between Sierra Leone and Lower Guinea. The tree is from 20 to 30 feet high, has smooth cylindrical branches, and bears a profusion of purplish flowers. The flower yields a large brownish-yellow fruit, which enfolds in the same follicle the red and white seeds that are inaptly called kola nuts. The tree begins to bear in its fourth or fifth year, but attains its greatest fecundity only in its tenth. Kola contains nearly all the constituents of coffee, tea, and cocoa, and other constituents not possessed by them. It has a larger propor-

tion of caffeine than coffee or tea, and more theobromine than cocoa.

KOLCHAK, KONSTANTINE, a Russian admiral, chief leader of the anti-Bolshevik elements in Russia. He took a prominent part as admiral in the naval operations around Port Arthur during the Russo-Japanese War, in 1904, and during the European War he was in command of the Black Sea Fleet. After the Bolshevik Government came into power, he fled to Siberia, where he succeeded in seizing the dictatorship of the All-Russian Provisional Government, in 1918, and established headquarters at Omsk. For over a year he waged war against the Soviet Government at Moscow which seemed at one time on the point of success, but late in 1919 his forces began crumbling. He was finally handed over a prisoner to Bolshevik sympathizers by his own troops and executed as a traitor.



ADMIRAL KOLCHAK

KOLDING, a seaport of Jutland, Denmark. As it was for a time the residence of the Danish kings it possesses the ruins of the castle, their home. It has a good harbor and the trade in timber, hides and provisions is extensive. Pop. about 15,000.

KOLGUEF, or **KALGUEF** (käl'gwef), an island of Russia, in the Arctic Ocean, belonging to the province of Archangel; area, 1,350 square miles. It is visited in summer by fur hunters, walrus hunters, and fowlers, who capture eider ducks, swans, and other sea birds that yield down. The only permanent inhabitants are a few Samoyedes.

KOLHAPUR, the capital of the state of Kolhapur in India, located about 188 miles southeast of Bombay. The state is largely populated by the Mahrattas, the soil is fertile and produces cereals, cotton, and sugar-cane. Population of the State, about 900,000. Population of the town, about 50,000.

KOLIN, or **KOLLIN**, a town of Bohemia, on the Elbe; 38 miles E. by S. of Prague. A great battle was fought, June 18, 1757, in its vicinity between 54,000 Austrians under Marshal Daun and 31,000 Prussians under Frederick II. The latter were defeated with a total loss of 14,000 men; the Austrians lost 8,000.

KOLMAR, or Colmar, a city in Alsace.

KÖLN. See COLOGNE.

KOLUSCHAN (kō-lösh'an), a linguistic stock of North American Indians. They comprise some 10 or 12 tribes, numbering about 6,000, nearly all of whom live in Alaska.

KOLYMA (kōl-ē-mä'), a river of Eastern Siberia, flowing from the Stanovoi Mountains 995 miles N. E. of the Arctic Ocean. It is only free from ice during 11 weeks in the year. Its waters are full of fish.

KOMORN, a town and fortress in Hungary, on the island of Schütt, in the Danube. The fortress, one of the strongest in Europe, commenced in the end of the 13th century, was greatly enlarged and strengthened by Matthias Corvinus; and again in 1805-1809. Though taken by Ferdinand I. in 1527, it successfully withstood the Turks in 1543, 1594, and 1663. Klapka held it for the Hungarians against the Austrians from October, 1848, to September, 1849.

KONG, a district of west Africa, along the upper course of the Comoe. The district is a plateau, whose average elevation is 2,300 feet above sea-level, rising in a few groups of peaks up to 6,000 feet. The Kong Mountains of the geographers are isolated granitic peaks only 300 feet above the plateau. The people, Mandingoes by race and Mohammedans by religion, manufacture cotton stuffs and carry on indigo dyeing. The capital of the state is the town of Kong, population, about 12,000. This district was declared a protectorate of France in 1889.

KONG-FU-TSE. See CONFUCIUS.

KONGO or **CONGO FREE STATE**, or **BELGIAN KONGO**, a territory in Africa which, recognized by the European powers assembled at the conference at Berlin in 1885, has the following

boundaries: The N. bank from the mouth, with a strip of territory averaging about 60 miles in width, as far as Manyanga, about 240 miles from Banana, the entrance part of the river. At Manyanga the French territory commences and continues along the N. bank, passing Stanley Pool as far as the Mobangi. The territory of the Kongo Free State recommences at this river, and the boundary line runs along the left bank as far as the 4th parallel of N. latitude, which then becomes the N. boundary of the central portion of the state. On the N. E. it extends to the watershed of the Kongo basin, E. to lon. 30° E. and Lake Tanganyika, S. E. to Lake Bangweolo and the S. watershed of the Kongo basin as far as Lake Dilolo, S. W. to the Kassai river, to lat. 7° S., the Kwilu, the Kwango, and the parallel of Nokki. These boundaries were only finally settled by the neutrality declarations of 1894 and 1895, after a series of treaties. The area is stated at 900,000 square miles; pop., about 10,000,000. The Kongo Free State is governed by an administrative bureau at Brussels, also by a Governor-General, resident in Kongo who has his headquarters at Boma, 60 miles from the sea, on the right bank of the river. The state has stations at Banana, Vivi, Boma, and Matadi on the Lower Kongo; at Lukungu, Issangila, Manyanga, Lutete on the Middle Kongo; and at Leopoldville, Kinshassa, Kwamouth, Lukolela, Equator, Bangala, and Stanley Falls on the Upper Kongo, etc. Besides these the state has erected two stations on the Kasai, Luebo, and Luluaberg. All imports are free, and only such export duties are levied as are necessary to carry on the work of administration. It has a coinage and postal service, and has entered into the Postal Union.

The inhabitants of the Kongo basin belong to what has been termed the Bantu race. They are a happy, inoffensive people, not so dark as the Fan or Ethiopian. Split up into numberless tribal communities, they can offer but slight resistance to the advance of civilization; and as they are born traders, they take very readily to commerce. The Swaheli language has much in common with the Kishi Kongo, or language spoken on the W. coast. The religion is mainly fetichism; and domestic slavery exists everywhere. The name of French Kongo is now given to what was known as the Gaboon territory; and Portuguese Kongo is the coast country to the S. of the independent state. The climate of the Kongo State is tropical. The interior is more healthful than on the coast. The principal products are ivory, palm oil, palm kernels, india-rubber, various gums, ground nuts, camwood, beeswax, orchilla; also coffee, tobacco, hill rice, maize, and sorghum. Tropical fruits, such as bananas, pineapples, and mangos, abound.

KONGO RIVER, a Central African river, which Stanley proposed to call the Livingstone. At its mouth on the Atlantic seaboard the Kongo is an immense body of water, nearly 10 miles wide, and over 1,300 feet in depth. Its upper course remained unknown till Stanley identified the Kongo with the Lualaba, and so connected it immediately with the great system of lakes S. and W. of Lake Tanganyika, and less directly with Tanganyika itself. From the Chibalé Mountains to its mouth it has a length of 2,900 miles; by its great and numerous tributaries (such as the Alima, Kwango, Kasai, Ruru) it is said to drain an area of 1,300,000 square miles. It has but one mouth and no delta, and brings down a volume of water exceeded only by the Amazon. From the great lake-like expanse of Stanley Pool vessels can steam 1,000 miles into the heart of Africa.

KÖNIGGRÄTZ (-grāts), a town of Bohemia, Austria, on the Elbe; 73 miles E. by N. of Prague. A signal victory was gained here by 240,000 Prussians over 220,000 Austrians on July 3, 1866. The Austrians name the battle Sadowa from an adjoining village nearer the center of the battlefield. Pop., 11,000.

KÖNIGSBERG, a town and fortress in East Prussia, Germany, on the Pregel river; 366 miles N. E. of Berlin. The original nucleus of the place was the blockhouse built in 1255 by the Knights of the Teutonic Order. It was the headquarters of the grandmaster of the Order, and from 1525 to 1618 was the residence of the Dukes of Prussia. In the castle chapel (built in 1592) Frederick I. crowned himself first king of Prussia in 1701, and William I. was crowned in 1861. The Kneiphof parish church is a Gothic structure, erected in 1333; in an adjoining building KANT (*q. v.*) lies buried. The university was founded as a Lutheran institution in 1544. The town was first fortified in 1626. By the treaty signed here in 1656 the duchy of East Prussia acknowledged the suzerainty of Sweden, instead of Poland. Königsberg was occupied by the Russians in 1758 and by the French in 1807. In the World War the place suffered by the Russian invasion in 1914, but the Germans soon recovered the town. Pop. about 250,000.

KÖNIGSTEIN, a fortress of Saxony, once regarded as impregnable, but now of no military importance, on a rock 800 feet above the Elbe, 24 miles S. E. of Dresden. Here the Saxon army yielded to Frederick the Great in 1756.

KONKAN, the name given to the strip of coast districts in Bombay presidency, India, extending from Gujarat on the N., past Goa, as far as the S. limit of North Kanara district; the breadth varies from 1 or 2 to 50 miles, as the Western Ghâts approach or recede from the sea; area 16,415 square miles. The Konkan includes North Kanara, the British districts of Ratnagiri, Kolaba, and Thana, Bombay city and island, the native states of Jawhar, Janjira, and Sawantwari, and the Portuguese territory of Goa. The common language is Marathi.

KONSTANZ. See CONSTANCE.

KOO, VI-KYUIN WELLINGTON, a Chinese diplomat, born in Shanghai, China, in 1888. He was educated in various schools and colleges in China and at Columbia University, from which he graduated in 1909. After occupying various official positions in China, he was appointed Minister to Mexico in 1915. This was followed by his appointment as Minister to the United States in the same year. He served on many commissions connected with Chinese affairs and received many decorations for his services. He wrote "The Status of Aliens in China" (1912) and edited "Studies in Chinese Treaties" (1914).

KOODOO, a beautiful antelope, slate-gray, with transverse white markings. The males with spirally twisted horns, about four feet long; the females hornless; height about five feet at the shoulders. Extends from South Africa to Abyssinia.

KOOLOKAMBA, an anthropoid ape shot by Du Chaillu in the forests of Western Equatorial Africa. The shoulders are broad, the ears large, the arms extend below the knee; the limbs adapt it to go on all fours and to climb trees; the waist is as broad and thick as the chest. It feeds on vegetables.

KOORIA MOORIA ISLANDS, a group of five islands on the S. E. coast of Arabia, belonging to Great Britain. There was a considerable deposit of guano on the largest island; but it was not of very good quality, and is now exhausted.

KOOTENAY, a river in British Columbia, 300 miles long, noted for its curvature. It flows through a pleasant region named also Kootenay.

KORAN, the Mohammedan scriptures, which professedly consist of revelations made by Allah (God) to Mohammed, the medium of communication being the angel Gabriel. When a Mussulman quotes from them, the formula he uses is not "Mohammed says," but "God says." He calls the book the Book of God, and the Word of God, or the Book. Mohammed wrote nothing himself, yet his followers noted down his utterances on leather, palm leaves, stones, and even the shoulder blades of sheep. His companions also preserved much by oral recitation.

The Koran is smaller than the Bible. It is divided into 114 suras, or chapters, arranged achronically. The chapters are named as well as numbered; thus, ch. ii. is denominated "the Cow"; ch. v., "the Table"; lxxxvi., "the Night Star." The work consists of moral, religious, civil, and political teachings, commingled with promises, threatenings, etc., to be fulfilled in the future world; with Biblical narratives, Arabic and Christian traditions, etc. Later revelations sometimes revoked or essentially modified those which had gone before. The Caliph Abu Beker, or Bacr, directed Zeid ibn Thorbit to collect the scattered utterances of the Koran. Afterward there was a revision by the Caliph Othman. It has been translated into most European languages.

KORDOFAN, or **THE WHITE LAND**, lately a province of the Egyptian Sudan; separated from Sennaar on the E. by the White Nile, and from Dar-Fûr on the W. by a strip of desert; area estimated at 41,500 square miles; pop. about 300,000. The province is traversed by no rivers; but water is found almost everywhere at a comparatively short depth. The chief produce of the soil is millet, the principal food of the inhabitants. Gum trees, mimosas, thorny plants abound, but there is no forest timber. Gums, hides, ivory, ostrich feathers, and gold are exported. Three-fifths of the population are settled; the rest are nomadic. The aborigines belong mainly to the Nuba stock, but use a negro tongue and are mostly pagans. There is a large element of nomad and slave-hunting "Arabs," Moslems in faith. The capital is El-Obeid. In the end of the 18th century Kordofan was conquered by the ruler of Sennaar, then by the sultan of Dar-Fûr; in 1821 it was annexed by Mehemet Ali of Egypt, but was lost to the Egyptians by the Mahdi's revolt in 1883. When the Egyptian Sudan was officially organized in 1899, Kordofan became one of its provinces.

KOREA, a former empire in Asia, since 1910 a part of the Japanese Empire comprising the peninsula lying between the Yellow Sea and the Sea of Japan, and separated by the Strait of Korea from the Japanese Islands. It has a coast line of about 1,740 miles, and a total area of about 90,000 square miles. The N. boundary line is formed by the river Tu-man flowing N. E., and the Amnok flowing S. W. from the watershed of Paik-to-san. The Tu-man, for the last 5 miles of its course, separates Russian Asia from Korea. A belt of land, 5,600 square miles, on the N. side has for the last three centuries been constituted a neutral zone between Korea and Manchuria, but is now being gradually encroached upon from both the Chinese and Korean side.

Occupying about the same latitude as Italy, Korea is also like Italy hemmed in on the N. by Alpine ranges, and traversed from N. to S. by a branch chain. From the N. the chain runs close to the coast, till, about the 37th parallel, it trends inland.

The climate is healthful, bracing in the N., but colder in winter and hotter in summer than in corresponding European latitudes. Various kinds of timber trees abound, except in the W., where wood is scarce. The fauna is very considerable, and besides tigers, leopards, deer, includes pigs, tiger-cats, badgers, foxes, beavers, otters, martens, and a great variety of birds. Among the products are rice, wheat, beans, cotton, hemp, maize, millet, sesame, perilla. Ginseng grows wild in the Kange Mountains, and is also much cultivated about Kai-song. The cattle are excellent (the bull being the usual beast of burden), the ponies very small but hardy, fowls good, pigs inferior. Iron ores of excellent quality are mined; and there are copper mines. The output of silver is small. Gold to the value of $500,000 has been exported in one year. Three-fourths of the trade is with Japan, and over a fifth with China.

The earliest records of Korea go back to 1122 B. C., when Ki-tze with 5,000 Chinese colonists brought to Korea Chinese arts and politics. Almost the first knowledge of Korea obtained by Europe was through the shipwreck of some Dutchmen on the coast in 1653. The missionary De Cespedes had, however, entered Korea at the end of the 16th century, and from 1777 other missionaries followed. In 1835 Maubant gained a footing in Korea, but in 1866, after thousands of converts had been put to death, the only three Catholic missionaries left had to flee for their lives. Japan was the first to effect a footing in Korea in 1876, when a treaty was concluded between the two countries. Korea followed this up by treaties with China and the United States in 1882; with Germany and Great Britain, 1883; with Italy and Russia, 1884; and with France, 1886. The three ports opened to foreign trade are Chemulpo, Fusan, and Gen-san. The new policy has led to discontent; and there was an insurrection in 1884. The suzerainty of China had been acknowledged by Korea from early times, but Japan protested, and this was one of the alleged causes of the Japanese-Chinese War of 1894. China renounced her claim in 1895 and Japan began to display an active interest in Korea. Russia thereupon asserted her right to a voice in Korean affairs, and by 1901 the rival interests of the two powers caused a straining of their relations. In April, 1903, Russian activity on the Yalu River, on the boundary between Korea and Manchuria, attracted Japan's special attention. All concessions granted to Russia were nullified by the Korean King, under pressure of Japanese influence. Still the Russians managed to secure a foothold at Yongampho, and in October built a fort at that place. This aroused Japan to greater activity, and Korea became the principal bone of contention that led to the Russo-Japanese War. After the beginning of hostilities, in February, 1904, Japan took possession of Seoul, the capital, expelled the Russian minister, and virtually established a protectorate over the kingdom. Japan landed her troops at various points on the Korean coast, and northern Korea became the scene of Japan's land operations, and the Japanese army was finally mobilized on the Yalu. On April 15, 1904, the royal palace at Seoul was burned to the ground.

In 1907 Prince Ito assumed charge of Korea's foreign affairs. Japan's attempts to disarm Korea's soldiery led to two years fighting, in which thousands were killed. A Korean Independence Association was formed in China and appealed to the Paris Peace Conference. Disorders and riots in 1919 were sternly suppressed by the Japanese Government. In 1920, it was stated that the Korean Nationalists had appealed to the Russian Soviet Republic for help against Japan. See JAPAN.

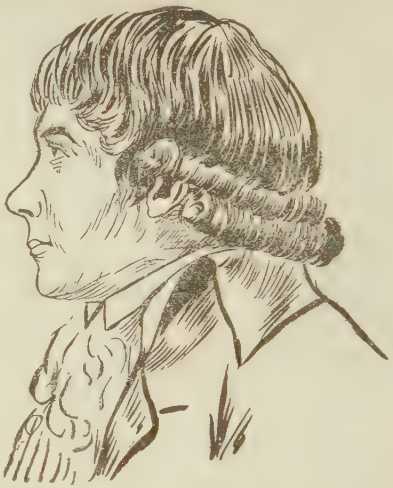
KÖRNER, KARL THEODOR (kur'-ner), a German poet; born in Dresden, Sept. 23, 1791. After irregular studies at Freiberg, Leipsic, and Berlin, young Körner was appointed dramatist to a Vienna theater; for it he wrote some light comedies. The uprising of the Ger-

man nation against Napoleon inspired Körner with patriotic ardor. He displayed heroic personal courage in many fights and encouraged his comrades by fiery patriotic songs.

These published in 1814 under the title of "Lyre and Sword," are regarded by the Germans with a kind of sacred admiration. The most famous of these pieces is the "Sword Song," composed in a pause of battle, and only a few hours before the author fell, Aug. 26, 1813.

KOROLENKO, VLADIMIR, a Russian author. He was born at Jitomir in 1853 and was educated at Jitomir, Rovno, the Technological Institute, Petrograd; Moscow Agricultural Academy. He was banished to Vologda, settled in Kronstadt, and returned to Petrograd in 1877. He was banished to Glasov, then to Berezovskava-pochinka; imprisoned in Viatka, moved to Tomsk and to Perm in 1880. He then went to Yakutsk and settled in Nijni-Novgorod in 1885. He went to Petrograd in 1896, and since 1900 has been associated with the editing of the journal "Russkoe Bogatshbo." His works include: "Makar's Dream"; "In the Hunger-Year"; "The History of a Contemporary of Mine"; "The Blind Musician"; "Without Speech"; and three volumes of tales and sketches.

KOSCIUSKO, or KOSCIUSZKO, TADEUSZ, a Polish patriot; born in Lithuania, Feb. 12, 1746. He chose the career of arms, and was trained in France. In 1777 an unhappy love affair drove him to the United States, where he fought for the colonists and advanced to the rank of Brigadier General. He returned to Poland in 1786. When Russia attacked his country in 1792, Kosciusko held a position at Dubienka for five days with only 4,000 men against 18,000 Russians. King Stanislaus submitted to the Empress Catharine, whereupon Kosciusko resigned and retired to Leipsic. After the second partition of Poland he led the national movement in Cracow and was appointed dictator and commander-in-chief (1794). His defeat of a greatly superior force of Russians at Raclawice was followed by a rising of the Poles in Warsaw. He established a provisional government and took the field against the Prussians, but, defeated, fell back upon Warsaw. He was overpowered by superior numbers in the battle of Maciejowice, Oct. 10, 1794; and, covered with wounds, fell into the hands of his enemies. Two years later the Emperor Paul restored him to liberty. He spent the remainder of his life chiefly in France. When Napoleon, in 1806, formed a plan for the restoration of Poland, Kosciusko refused his aid. In 1814 he besought the Emperor Alexander to grant an amnesty to the Poles in foreign countries, and to make himself constitu-



TADEUSZ KOSCIUSKO

tional King of Poland. He died in Switzerland Oct. 15, 1817, by the fall of his horse over a precipice.

KOSCIUSKO, MOUNT, one of the highest mountain peaks in Australia, in the Muniong Alps, in New South Wales, near the frontier of Victoria; 7,308 feet high.

KOSHER, pure, according to the Jewish ordinances. Thus "Kosher meat" is meat killed and prepared by Jews after the Jewish manner, and so fit to be eaten by Jews.

KOSLIN, a town in Pomerania, Germany, situated about 8 miles from the Baltic Sea. In addition to a number of churches and schools it has important soap, paper and silk factories. Pop. about 25,000.

KOSLOV, a town in the province of Tambov, Russia, about 250 miles S. E. of Moscow. The district is noted for its breed of horses, and as Koslov is at the junction of two railroad lines it does a considerable business in live-stock and grain. Pop. about 50,000.

KOSSOVO, the "Field of Blackbirds," a plain in Turkey, near the Serbian frontier W. of the Prishtina, on which two battles were fought: (1) between Sultan Murad I. and the Servians under their Tsar Lazar, June 15, 1389; both sovereigns fell, and the Serbians lost their independence in consequence of

their defeat; (2) between the great Hungarian general Hunyady and Sultan Murad II., on Oct. 17–19, 1448, when the former was defeated.

KOSSUTH, FRANCIS, an Hungarian statesman, born in 1841, the son of Louis Kossuth. He was educated at Budapest where he studied engineering. He engaged in the practice of his profession and at the same time carried on propaganda for the freedom of his country. He was elected as a member of the Hungarian Parliament in 1887 but declined to serve. He became eminent as an engineer and was decorated by the Italian Government. On the death of his father the son accompanied the remains to Budapest, where he was greeted with great enthusiasm by the Independents and acclaimed the natural successor of his father and a leader of that party. In 1896 he was elected to the Diet, and in 1905 the party became a dominant one in the Diet and under the influence of Kossuth became great even with the Emperor. He was appointed Minister of Commerce in the Wekerle cabinet, but continued as leader of his party until 1909 when his advocacy of a Hungarian national bank was strongly opposed and he resigned his seat in the Diet. He thereafter took little part in politics and died on May 25, 1914. He edited several volumes of memoirs of his father and also contributed to many scientific papers. He also contributed articles to newspapers and wrote much on the subject of Hungarian independence.

KOSSUTH, LOUIS, the leader of the Hungarian revolution; born in Monok in Hungary in 1802. His family was of noble rank, but his parents were poor. He studied law at the Protestant college of Sarospatak, and practiced for a time. In 1832 he commenced his political career at the Diet of Presburg as the deputy of absent magnates. The publication of a lithographed paper led, in May, 1837, to Kossuth's imprisonment. He was liberated in 1840, and became the editor of the "Pesti Hirlap," a newspaper in which he advocated views which took strong hold of the youth of the country. In 1847 he was sent by the county of Pest as deputy to the Diet, and soon became the leader of the opposition. He advocated the emancipation of the peasants, the abolition of all feudal rights and privileges, and, after the French revolution of 1848, openly demanded an independent government for Hungary and constitutional government in the Austrian hereditary territories. To his speeches must in great part be ascribed not only the Hungarian revolution, but the insurrection in Vienna in March, 1848. On the resignation of the ministry in September, 1848, he found himself at the head of the Committee of National Defense, and prosecuted with extraordinary energy the measures necessary for carrying on the war.

He was now appointed provisional governor of Hungary; but being disappointed in his hopes for the intervention of the Western Powers, and finding the national cause jeopardized by the interference of Russia, he endeavored to arouse the people to a more desperate effort. The attempt was vain. After the defeat at Temesvar on Aug. 9, 1849, he found himself compelled to flee into Turkey, where he was made a prisoner; but, though his extradition was demanded both by Austria and Russia, the Porte resisted their claims. In September, 1851, he was liberated by the influence of England and the United States, and, sailed in an American frigate to England, where he was received with every demonstration of public respect and sympathy. In December of the same year he landed in the United States, where he met with a most enthusiastic reception.

He returned in June, 1852, to England, and there he chiefly resided, till Sardinia and France prepared for war with Austria; when, on condition of something definite being done for Hungarian independence, he proposed to Napoleon to arrange a Hungarian rising against Austria. He secured England's neutrality in the event of the war extending to Hungary. The peace of Villafranca bitterly disappointed Kossuth, but did not dishearten him. He made two other attempts (in 1860–1861, in conjunction with Cavour and with the help of Napoleon; in 1866, with the aid of Victor Emmanuel) to bring about a rising against Austrian rule in his native country, but without final success. When in 1867 Deák effected the reconciliation of Hungary with the dynasty, and initiated a *modus vivendi* between the two parts of the Austro-Hungarian monarchy, Kossuth retired from active political life. He refused to avail himself of the general amnesty (1867), and to return to his native land to take the oath of fealty to the dynasty he had once dethroned. In 1880–1882 he published three volumes of "Memories of My Exile"; others followed in 1890. He died in Turin, March 21, 1894.

KOSTROMA, capital of the government of the same name, located near the Volga river about 500 miles E. of Petrograd. The province (pop. about

2,000,000) has an area of over 32,000 square miles more than half of which is covered with forests. Hemp and flax are the chief products. The most notable building in the city is the Cathedral of the Assumption, built in 1272. Pop. about 70,000.

KOTO, a musical instrument used by the Japanese. It is about six feet long, and in shape is an oblong box, larger at one end than the other, and with a convex top over which 13 silk strings are strung and fastened tightly at each end.

KOTOW, the ceremony of prostration, with striking of the forehead on the ground nine times, performed before the Emperor of China.

KOTZEBUE, AUGUST FRIEDRICH FERDINAND VON (kot'ze-bö), a German dramatist; born in Weimar, May 3, 1761. Weak in character-drawing, he had a strong sense for situations. Of about 200 tragedies, comedies, dramas, and farces, the best known now are: "Misanthropy and Repentance" (1789), long popular in England and the United States as "The Stranger"; "The Spaniards in Peru" (1796), adapted by Sheridan as "Pizarro." "The Indians in England" (1790) won great applause. "German Provincials" was one of his best comedies. His most celebrated novel was "Sorrows of the Ortenberg Family" (1785). The famous "Doctor Bahrdt with the Iron Brow" (1790), published under another's name, contained an attack on Goethe, Schiller, etc., who declined to admit him to their society. He was long in Russian service; and was once banished to Siberia by the Emperor Paul, who, however, recalled him a year later through being moved by something in one of his plays, gave him a rich estate, and made him aulic councilor and director of the court theater at St. Petersburg. He was assassinated in Germany as a Russian spy, by a student, in Mannheim, March 23, 1819.

KOUMISS (kö'mis), a fermented beverage made from mare's milk in the steppes of Russia by the Kirghez, Tartars, Kalmuks, etc. The alcohol is derived from the milk sugar, which is present in mare's milk in larger quantity than in the milk of other animals. This fresh milk is diluted with water, and placed in a sack of goat skin or the skin from the entire hind quarter of a horse, the wider end serving for base and the leg portion for the neck. There is generally added some yeast, the sediment from a previous brewing, to induce fermentation. In from 12 to 24 hours fermentation is complete, the product being known as "young koumiss," or saumal. Fresh milk is added daily, and as the product is concentrated by evaporation of water from the surface of the hide the old koumiss is much stronger than the new. Koumiss is an acid liquid of a not unpleasant pungent taste and an ethereal bouquet. It may be made from the milk of any animal. Cow's milk is used in the American factories of koumiss. It is recommended by physicians in cases of extreme debility.

KOVNO, capital of government of Kovno, Lithuania, bordering on Poland and reaching nearly to the Baltic, on the Niemen, 58 miles N. W. of Vilna. It consists of an old and new town, and is a first-class fortress. Industries include wire factories and breweries. The town was captured by the Germans under General von Eichhorn Aug. 17, 1915, which led to the evacuation of Suwalki and the great Russian retreat. Pop. about 100,000.

KOXINGA (kō-shing'ä), a Chinese pirate, who flourished in the 17th century. He made himself King of Formosa and terrorized the Chinese coast. He was finally killed in a sea fight.

KRA, or **KRAO**, the isthmus connecting Siam with the Malay Peninsula, whose minimum breadth is 44 miles. Various projects have been mooted for the construction of a ship canal through this part of the isthmus which would shorten the journey from Ceylon to Hong Kong by 300 miles, and that from Calcutta to Hong Kong by 540 miles.

KRAAL, a South African native village or town, usually a collection of huts surrounded by a palisade. Sometimes the term is applied to a single hut.

KRAGUYEVATZ, a town in Serbia, 15 miles W. of Yagodina. Has arsenal and manufactures ammunition and explosive powder. In 1915 during the Austrian invasion the town saw much fighting and was in 1916 occupied by both Austrians and Bulgarians. Pop. about 15,000.

KRAIN. See CARNIOLA.

KRAKATOA (krä-kä-tō'ä), a volcanic island in the Strait of Sunda, between Java and Sumatra; was in 1883 the scene of one of the most tremendous volcanic disturbances on record. The crater walls fell in, together with a part of the ocean bed, carrying with it two-thirds of the island. At the same time a gigantic ocean wave inundated the adjoining coasts of Java and Sumatra causing a loss of 36,500 lives, and the de-

struction of 300 villages, and then careered round the entire globe. The noise of the eruption was heard for a distance of 2,000 and even 3,000 miles.

KRAKOW. See CRACOW.

KRALJEVO, a town in Serbia, on River Ibar, about 35 miles N. W. of Kraguyevatz. It suffered greatly during the Austro-German invasions of 1915 and 1916, being one of the pivotal points to which the Serbian army had retired. Pop. about 4,000.

KRANACH, L., a painter, born in 1472.

KROPOTKIN, PETER ALEXIEVICH, PRINCE, a Russian scientist; born in Moscow, Dec. 9, 1842. He was in the Russian army for a time. Charged with anarchist affiliations, he was imprisoned two years in Russia, escaped, founded the anarchist paper, "La Révolté," in Geneva (1879), and after being expelled from Switzerland in 1881, commenced a crusade against the Russian Government in the English and French press. He was imprisoned in France from 1883 to 1886. He lectured in various parts of the world; is the author of "To Young People"; "Words of a Revolutionist"; "In Russian and French Prisons"; "In Search of Bread"; and pamphlets on nihilistic subjects; and his contributions on modern scientific subjects to the leading reviews were numerous and interesting. He died in 1921.

KRASINSKI, SIGISMUND (krä-sin'skē), a Polish poet; born in Paris in 1812. He wrote the drama "Iridion" (1836); the drama "The Undivine Comedy" (1837-1848); "The Dawn" (1843); and "Psalms of the Future" (1845-1848), collections of lyric poems full of religion and patriotism. He died in Paris in 1859.

KRASNIK, a town in Poland, capital of government of the same name, 28 miles S. W. of Lublin. In the German operations to destroy the Polish salient in 1915, great battles were fought near Krasnik. On July 2 the Germans passed through the town, which was the principal intermediate point on the Russian line. Pop. about 13,000.

KRASNOVODSK, a Russian fortress on the E. shore of the Caspian Sea. It has been the starting point of many important scientific and military expeditions to central Asia.

KRASNOYARSK, capital of the province of Yeneseisk, Siberia, located on the Trans-Siberian railway, 2,720 miles from Moscow. Founded in 1628 as a fortified prison settlement, it became in 1920 the center of a Siberian Government set up by the peasants to replace that of the Omsk Government. Pop. about 80,000.

KRASZEVSKY, JÖSEF IGNACY (kra-shĕv'skē), a Polish novelist; born in Warsaw, July 28, 1812. He was the author of over 500 works, consisting, besides valuable historical writings, of romances, novels, critiques, travels, political treatises, epic poems, etc. Of poetry, among his chief works was the epic "Anafielas" (1840–1843), founded on Lithuanian history. "The Devil and the Woman" (1841) was an imaginative drama. But his best work was in his romances and novels, over 240 in number. Among them were: "The Poet and the World" (1839); "Ulana" (1841); "The Hut Beyond the Village" (1855); "About to Die" (1871). He died in Geneva, March 19, 1887.

KRAUSKOPF, JOSEPH, an American clergyman; born in Ostrov, Prussia, Jan. 21, 1858. He came to the United States in 1872; was graduated at the University of Cincinnati in 1883; made rabbi by Hebrew Union College; and in 1887 became rabbi of Reform Congregation Keneseth Israel in Philadelphia. He became a leader in the reformed Jewish movement, and published "Evolution and Judasim," and many volumes of lectures.

KREFELD (krā'feldt), one of the important manufacturing towns of Germany; 12 miles N. W. of Düsseldorf. It owes its importance to the settlement here, in the 17th and 18th centuries, of refugees from Juliers and Berg, and the neighboring countries; they established the silk and velvet manufactures for which Krefeld is now noted. Pop. about 150,000.

KREHBIEL, HENRY EDWARD, an American musical critic; born in Ann Arbor, Mich., March 10, 1854. He was musical critic successively on the Cincinnati "Gazette" and the New York "Tribune." His published works include: "The Technics of Violin Playing," "How to Listen to Music," etc.

KREISLER, FRITZ, an Austrian violinist; born in Vienna in 1875. He entered the Vienna Conservatory at the age of seven years, and at the age of ten won a gold medal for violin playing. He studied afterward at Paris, and in 1889 gave a concert tour in the United States, which was an immense success. On his return to Europe he continued his studies and made a second tour of the United States in 1899. He continued to make regular tours through-

out the country. He was generally considered to be, in many respects, the master violinist of his day. At the out-

FRITZ KREISLER

break of the World War in 1914, he joined the Austrian colors, and was wounded at Lemberg. Having recovered, he visited America, where he was well received. Following the entrance of the United States in the war, unwarranted criticism influenced him to abandon the concert stage. At the end of the war, however, he resumed his appearances and was received with even greater acclamation than before. In addition to his performances as a player of the violin, he composed many pieces of great merit.

KREMERSITE, an isometric mineral, occuring in octahedrons, as a sublimation product, in the fumaroles of Vesuvius. Color, ruby-red; soluble in water. Composition (according to Kremers), a hydrated chloride of potassium, ammonium, and iron.

KREMLIN, THE, an architectural pile in Moscow, on the N. bank of the river Moskva. It forms the center of the city of Moscow, and around it, with a radius of about a mile, is a line of boulevards, extending, however, only on the N. side of the river. Outside of this line, and concentric with it, is another line of boulevards, with a radius of a mile and a half; while beyond all, and forming the girdle of the city, is the outer rampart, with a circumference of 26 English miles. The Kremlin comprises the principal buildings, as the Cathedral of the Assumption of the Virgin, founded in 1326, a small but gorgeously decorated edifice; the Cathedral of the Archangel Michael, containing the tombs of all the czars down to the time of Peter the Great, who changed the royal burial place to Petrograd, the Church of the Annunciation, the floor of which is paved with jaspers, agates, and carnelians of various shapes; the tower of Ivan Veliki, 200 feet in height, and surmounted by a magnificent gilded dome from which, as from all the domes of Moscow, rises the "honorable cross";

KREMLIN

the Czar Kolokol (king of bells), the greatest bell in the world, several palaces and collections of ancient arms and other antiquities; the arsenal, surrounded by the splendid trophy of 850 cannons, taken from the French, and the senate. The walls of the Kremlin are surmounted by 18 towers, and pierced with five gates. The Kremlin suffered during the revolution of 1917, and was pillaged at various times during revolutionary uprisings that followed. When the central Bolshevik Government was moved from Petrograd to Moscow, it became its headquarters.

KREMNITZ, one of the oldest towns of Hungary, in the county of Bars, in a deep, gloomy valley. It is famous for its gold and silver mines, which, however, are less productive now than formerly, and its mint.

KREMS, a town in Austria located at the junction of the Krems river with the Danube; about 40 miles N. W. of Vienna. The town has quite a few churches and schools, and a museum. Pop. about 15,000.

KREUZER, a small copper coin still in use in Austria, 100 making a florin or gulden (nominal value, 48 cents). The kreuzer was first coined in the 13th century in Tyrol, was originally of silver, and derived its name from the cross (*kreuz*) formerly conspicuous on it.

KREUZNACH (kroits'na*h*), a town of Rhenish Prussia, dating from the 9th century, on the Nahe. Its chief manufacture is champagne, its principal trade in wine and corn; but it is most notable for its salt springs. These were discovered in 1478, and, being serviceable in scrofulous and other affections, attract over 5,000 visitors annually.

KRIEMHILDE LINE. See HINDENBURG LINE.

KRISHNA, the 8th avatar (incarnation) of Vishnu. Kansa, a demon king of Mathura, having ruled oppressively, the Brahmans supplicated Vishnu to interfere. He, in reply, plucked off two hairs, one black, the other white; the former became Krishna. He was born at Mathur; his father was Vasudeva, a kshatriya (warrior), and his mother Devaki. Kansa seeking to destroy him when an infant, his father fled away with him, and hid him in a vaisya's (merchant's) shop. When eight years old it rained heavily, and the god rooted up a mountain, and obligingly held it as an umbrella over the heads of the villagers and their cattle. When a youth he sported with 16,000 milkmaids in the wilderness of Bindrabun. Next assuming four arms, he killed the tyrant Kansa. He married two wives, but his favorite was a mistress called Radha. According to Ward, about three-fifths of the whole Hindu population of Bengal are worshipers of this god.

KRODO, the Saturn of the ancient Saxons.

KRONSTADT, an important trading and iron manufacturing town, capital of a Hungarian county in the extreme S. E. of Transylvania. Pop. about 40,000. For the Russian Kronstadt, see CRONSTADT.

KROO, or **KRU**, a native race of Africa, much employed in doing rough work on vessels trading on the Liberian coast. Their territory extends about 70 miles along the W. coast; they are a stout, brawny race, and very industrious.

KRUGER, STEPHANUS JOHANNES PAULUS, a Boer statesman; born near Colesberg, Cape Colony, Oct. 10, 1825. He entered on the more active portion of his public career when he was

PAUL KRUGER

chosen a member of the Executive Council of the Transvaal in 1872. Eleven years later he was elected president for the first time. He was re-elected in 1888. He retained the office in 1893, and was re-elected in 1898. On the breaking out of dissensions between the Uitlanders and the Boers in 1896, and the raid of Dr.

Jameson in aid of the former, vigorous measures were adopted by President Kruger, resulting in the capture of Jameson and his 700 men, and the suppression of the rebellion. For this the president received the congratulations of the German emperor. In 1899 his policy led to war with England. The Boer reverses led to his departure for Europe, where he established himself in Holland. In the summer of 1901 he proposed visiting the United States for the purpose of inducing the government to give its moral support to the Boers, but on being informed that neither President McKinley nor after him President Roosevelt would receive him the project was abandoned. He died in Switzerland, July 14, 1904.

KRUPP, ALFRED, a German metal founder and steel gun manufacturer; born in Essen, Prussia, in 1812. His father founded the manufactory. The manufactory had grown to large proportions before the elder Krupp's son, Alfred, discovered the method of casting steel in very large masses. His fame was made by the production of the enormous steel siege guns with which the Germans did such terrible execution when they invested Paris. Krupp made his first cannon in 1846. In 1864 he declined to accept the letters of nobility offered to him by the King of Prussia. He was one of the wealthiest men in Germany, and did much for the welfare of his numerous employes. Some of Krupp's processes in the manufacture of steel and the making of cannon were very carefully kept from the knowledge of the outside world. None but employees were admitted to his foundries. The commission appointed by the United States Government to study the question of cannon foundries and armaments tried in vain to get Krupp's permission to enter his works. He died July 14, 1887. The Krupp works supplied most of the guns for and during the World War which the Germans used so effectively. Here the great guns, with a range of 75 miles, were made that bombarded Paris.

KRUSHEVATZ, a town in Serbia, 90 miles S. E. of Belgrade. During the Austro-German invasion of 1915 the town formed with Kraljevo, Alexsinatz and Nish, the main line of defense of the Serbian army. In October of that year it was taken by the enemy. Pop. about 7,500.

KRUTTSCHNITT, JULIUS, an American railway official; born in New Orleans in 1854. He studied engineering at Washington and Lee University in 1873. After teaching for several years he entered railway work as construction engineer. He rose rapidly to various positions, becoming in 1885 assistant general manager of the Atlantic system of the Southern Pacific railroad. Four years later he was appointed general manager of that system, and from 1895 to 1904 was general manager of the Southern Pacific railroad. He was also an official of other roads connected with that line. On his retirement as president, he became chairman of the executive committee of the Southern Pacific Co. He was considered one of the most capable railroad operators in the United States.

KUBAN REPUBLIC, a state the territory of which was formerly a province of the Russian empire, in the W. part of northern Caucasia, bordered on one side by the Black Sea and on the other by the Sea of Azov. It is watered by the river Kuban. Its population is 2,800,000, forty per cent. of which is Cossack, and 90 per cent. of which is Christian, the other ten per cent. being Tartar Moslems. It has an area of 36,645 square miles. After the collapse of the Russian autocracy, in 1917, which was followed by the disintegration of the empire, the people of the Kuban declared themselves a republic, the capital being at Ekaterinodor.

KUBELIK, JAN, a Bohemian violinist; born in 1879; began his career as a public performer in 1887, when he played before the Prague Philharmonic. For some time he performed at semi-private musicales, but after 1897 performed in public with great success in Milan, Rome, Naples, and Geneva. He toured Europe and England and in 1901 aroused great enthusiasm in the United States.

KUBLAI KHAN, the founder of the 20th Chinese dynasty, that of the Mongols or Yen. He was the grandson of Genghis Khan, and was proclaimed Emperor of the Mongols in 1260, in succession to his brother Mangou Khan. He reigned, at first, only in Mongolia and the countries conquered by Genghis Khan; but he invaded China in 1267; captured the Chinese emperor in 1279, and thus overthrew the Song dynasty, which had ruled for 319 years. He extended his conquests over Tibet, Pegu, Cochin China, and formed the greatest empire known in history, embracing the whole of Asia and part of Europe, from the Dnieper to Japan. He died in 1294.

KUEN LUN (kwen-lun'), a mountain chain of central Asia, which forms the N. wall of the Tibetan plateau, as the

Himalayas do the S. Starting from the Pamir plateau, the Kuen Lun extends E. The peaks of this region measure from 18,000 to 25,000 feet in altitude, and the passes from 13,000 to 18,000 feet. These mountains were almost unknown till the explorations of the Russian General Prjevalski, 1876–1888.

KUFIC COINS, the early Mohammedan coins engraved with inscriptions in the Kufic or epigraphic Arabic character, as distinguished from the Neskhi or cursive writing; but the term is often applied erroneously to Arabic coins in general.

KUH-HORN, a musical instrument made of wood or bark with a cupped mouthpiece, formerly employed by the mountaineers of Switzerland and other countries to convey signals or alarms in war time, but now only used by cowherds—hence the name.

KÜHLMANN, RICHARD VON, a German statesman. Prior to the outbreak of the World War he served as secretary to many important embassies, notably that of London. When in the middle of 1917 Chancellor Michaelis became head of imperial affairs, Kühlmann was given the post of Secretary for Foreign Affairs, succeeding Dr. Alfred Zimmermann. Kühlmann's most important work was the negotiating of the peace of Brest-Litovsk between the Bolsheviki and Germany. Although it was fairly well known that he did not approve of the extreme annexationist plans of the military party he was forced to accede to their wishes in every particular. In 1918 in the course of an address in the Reichstag, he made the remark that neither side could hope to win a complete victory but that the peace must be one of compromise. For this the military party under Ludendorff demanded his resignation.

KUHN, JOSEPH E., an American military officer; born in Kansas, in 1864. He was graduated from the United States Military Academy in 1885, and from the Engineering School of Application in 1888. He was commissioned a 2nd lieutenant in 1885 and reached the rank of major-general in 1917. He saw service in the Spanish-American War, served as instructor at the United States Military Academy, was a military observer during the Russo-Japanese War (1904-1905), assistant to the commandant at Fort Leavenworth, Kan., and director of the Engineering School (1909 to 1912). During the World War he served as a military attaché and observer in the war zone, from 1914 to 1916, commanded Camp Meade, Md. (1917), and was in command of the 79th Division from August, 1917, to June, 1919.

KUKA, or **KUKAWA**, a town in western Africa, the capital of Bornu, about 20 miles W. from the S. W. shores of Lake Tchad.

KU-KLUX KLAN, a secret American organization which, said to have been founded in 1866 at Pulaski, Tenn., originally for purposes of amusement only, soon developed into an association of "regulators." The proceedings of the Ku-Klux in the Southern States are one feature of the determined struggle to withhold from the emancipated slaves the right of voting. The outrages and murders which convulsed the country in 1868–1869 ended in the calling out of troops and the formal disbandment of the society in March of the latter year; but its name and often its disguises were used for years to cover the violence of political desperadoes.

KULANAPAN, a linguistic stock of North American Indians, also called Pomo, and Mendocino Indians. They were once a powerful people and occupied a large section of Northwestern California, but now only a few scattered individuals survive.

KULJA (köl'yä), a town of Zungaria, central Asia, on one of the great highways leading from China to West Turkestan, and on the Ili. This river rises on the N. slope of the Tian-Shan Mountains, and flows N. and N. W. into Lake Balkhash, after a course of about 750 miles. Kulja is the chief town of a fertile district that produces excellent corn, rice, cotton, tobacco, wine, and fruits, while its pastures support large herds of horses, camels, cattle, and sheep. This district (Kulja or Ili) revolted against China in 1865, was occupied by Russia in 1871, but 10 years later restored to the Chinese. Russia, however, retained 4,357 square miles of the W. part, now incorporated in the province of Semiryetchensk. The Chinese province has an area of 23,130 square miles and a population between 70,000 and 80,000. The town of Kulja has about 10,000 population, mostly Chinese inhabitants. New Kulja, 25 miles to the W., was destroyed by the rebels in 1866.

KULM, a village of Bohemia. It was the scene of a bloody conflict between the French and the allied Prussians and Russians in 1813. The result was the complete wreck of the French army, which lost in two days little short of

20,000 men; Vandamme capitulated with 10,000 men.

KUMAMOTO, a strongly fortified city of Japan, situated on the west coast of the island of Kiusiu. The harbor is deep enough only for small craft. Located near an active volcano, it has frequently suffered from earthquakes. A Buddhist temple a few miles away attracts many pilgrims. Pop. about 70,000.

KUMASI, the capital of the kingdom of Ashanti, western Africa. It occupies the side of a rocky hill, and is about 4 miles in circuit. The walls of the houses are mostly formed of stakes and wattle work, the interstices being filled up with clay; the roofs are of palm leaves. The king's palace was burned by Wolseley in 1874, but has been rebuilt. Pop. about 25,000. See ASHANTI.

KUMAUN, a division consisting of three provinces in British India, most of which are on the S. slopes of the Himalayas. The minerals, gold, copper, and lead are found here, and the forests have much valuable timber, which is cut under British supervision. The area of the division is 13,725 square miles. Pop. about 1,500,000.

KUMBUK, a large Indian tree. The bark is used for tanning black. It imparts the characteristic red color to native leather, and, if cut up into small pieces and boiled for six hours, gives a brown dye. Along with the bark of *Mimusops elengi* it is used to produce a red dye in jute. It affords a black one with iron. The wood is much used on account of its toughness for making shafts to gigs.

KUMQUAT, a tree about six feet high, of the orange genus, growing in China and Japan. The fruit, which is oval, is about the size of a gooseberry. It has a sweet rind and an acid taste. The Chinese use it as a preserve.

KUN (or KUEHN), BELA, a Hungarian Communist leader, was before the European War a university instructor and the author of a work on socialism. After the downfall of the Central Empires, in 1918, he devoted himself entirely to the organization of the Socialist movement in Hungary, being the mouthpiece of the extreme left nonpolitical radicals, corresponding to the Bolsheviki of Russia. On March 22, 1919, Count Karolyi, the Liberal Hungarian premier, having abandoned his effort to effect a compromise with the victorious Allies, voluntarily resigned and handed the reins of government over to the Bela Kun extremists. The latter immediately began to organize a government after the Russian pattern, though at the same time attempting to maintain peaceful relations with the Allies. The invasion of Hungary by Rumania and Czecho-Slovakia made this impossible, and a war with the invaders

BELA KUN

was carried on, at first with considerable success. The disorganized economic conditions of the country, however, proved too great an obstacle to the establishment of a firm government, and after a short five months of power, the Communist Government was overthrown by the labor organizations. Bela Kun fled to Austria, where he was imprisoned by the Austrian authorities, and there held until 1920, when it was reported that he was liberated and allowed to proceed to Russia.

KUNDAH OIL, an oil derived from *Carapa touloucouna*, or *guianensis*. It is acrid and bitter, and said to be well fitted for lamps. Called also tallicoonah oil.

KUNDUZ, a river and State of Afghan Turkestan.

KUNERSDORF, a village in Prussia; 4 miles E. of Frankfort-on-the-Oder; was the scene of one of the most remarkable battles of the Seven Years' War, fought Aug. 12, 1759, in which Frederick the Great, with 48,000 men, after gaining a half victory, was completely defeated by the allied Russians and Austrians, 78,000 men strong.

KUNKUR or **KANKAR**, a calcareous stratum found in many parts of India.

KUNNOJ (kun'oj), a formerly important town of British India, capital of the pergunnah of the same name, in the district of Furruckabad. At present the place is little more than an expanse of ruins. Kunnoj was formerly one of the greatest Indian cities.

KUNTHIA, a genus of palms, tribe *Arecæ*. It is found in New Granada, the Indians of which use the reedy stems as tubes through which to blow their poisoned arrows. The juice of the tree is used as a remedy for snake bites.

KUNZ, GEORGE FREDERICK, an American gem expert; born in New York City, Sept. 29, 1856; was educated at Cooper Union, receiving an honorary A. M. at Columbia University; 3rd vice-president of Tiffany & Co. since 1879. He became a special agent of the United States Geological Survey in 1883; was in charge of the department of mines at the Omaha, Atlanta, World's Columbian and Paris Expositions; was president of the New York Mineralogical Club and vice-president of the American Institute of Mining Engineers, etc. Author of "Gems and Precious Stones of North America"; annual reports on the "Production of Precious Stones," in "Mineral Resources of the United States," etc., and over 200 papers on gems and minerals in magazines and reviews. Decorated by France, Germany, and Japan.

KUPFERSCHIEFER (köp'fer-shēf'er), one of the series of strata which make up the "Dyas" type of the Permian System as it is developed in Germany. The bed consists of black bituminous shale, about two feet thick, abundantly charged with well-preserved remains of various fish, coniferous leaves, fruits, etc.

KUR, or **KURA** (ancient Cyrus or Kûros), a river of western Asia, rising in the mountains W. of Kars, flowing through the Russian governments of Tiflis, Elizabethpol, and Baku, and falling into the Caspian Sea, after a course of between 500 and 600 miles.

KURAM, (kö-ram'), a river rising in Afghanistan near the N. end of the W. Suliman range, and flowing through British territory into the Indus near Isakhel.

KURDISTAN (kur-dis-tän'), an extensive geographical, though not political, region of Asia, for the most part included within a line drawn from Sivas in Asia Minor by way of Diarbekr, Sulimanieh, Kermanshah and Urmia (in Persia), Mount Ararat, and Erzerûm, back to Sivas. Kurdistan thus belongs to both the Turkish and Persian monarchies, chiefly to the former, and contains about 50,000 square miles, with a population estimated at more than 2,250,000, thus distributed: Nearly 1,500,000 in Turkey, 700,000 in Persia, 45,000 in Russian Transcaucasia, and about 5,000 on the Afghano-Persian frontier (transplanted thither by Nadir Shah). The country embraces the mountainous chains that abut upon the Armenian plateau on the S. and on the Iranian plateau on the E. Thus its surface ranges from 5,000 up to 15,000 feet in altitude. The principal products of the soil and of native industry are wool, butter, sheep, gum, gall-nuts, hides, raisins, and tobacco.

The bulk of the inhabitants are Kurds (the ancient Carduchi), a race partly nomad and pastoral, and partly settled and agricultural. The Kurds speak a language called Kermanji, derived from an old Persian dialect. They are predatory and impatient of political subjection, but recognize a code of rude chivalrous honor and are hospitable and brave. They live under chiefs of their own, but are nominally subject to the Porte and the Shah of Persia respectively. Their origin is traced back to the Turanian Gutu or Kurdu, who were a powerful people in Assyrian times. The great Saladin was of Kurdish descent. In 1880 an extensive Kurdish rising against Persia took place. The chief towns are Bitlis, Van, Urumia, Diarbekr, and Kermanshah. Estimates of population give 1,500,000 to 2,500,000 to the Turkish portion, and from 400,000 to 500,000 to the Persian part.

KURILES (kö'ril-ez), a chain of islands in the North Pacific, extending S. W. to N. E. from Japan to Kamchatka, and belonging to Japan; area, about 5,000 square miles. The whole chain is of volcanic origin, and there are many active volcanoes, one of which is from 12,000 to 15,000 feet high. The population is very scanty.

KURIOLOGIC, a term applied by Warburton to that kind of hieroglyphic writing in which the principal circumstance in the subject stands for the whole. Thus a battle was depicted by two hands, one holding a shield and the other a bow; an insurrection by an armed man casting arrows; a siege, by a scaling ladder, and so on.

KURLAND. See COURLAND.

KUROKI, TAMESADA, COUNT, Japanese general; born at Sago, Japan, March 16, 1844. Having received a thorough military training, he first distinguished himself in the war with China in 1894, when he was entrusted with the mobilization of the army, and afterward with a field command, being present at the capture of Wei-hai-wei. He attained the rank of general in 1903, and was made a baron in 1895, and a count in 1907. In the war with Russia he gained the first victory on land at the Yalu river on May 1, 1904, and by his tactics subsequent to that battle effected the isolation of Port Arthur. In the later battles at Liaoyang, the Shaho, and Mukden he held important divisional commands. He is a member of the Japanese council of war.

KUROPATKIN, ALEXEI NICOLAIEVITCH (kur-ō-pat'kin), a Russian statesman and soldier; born in 1849. He was educated at the Cadet Corps School and the Pavloskoe Military College in St. Petersburg. In 1866 he was appointed sub-lieutenant in the Turkestan Rifles, and with the Russian advance was sent to Turkestan, where for a long time he was engaged in fighting. He wrote excellent works on the Balkan crusade and on Algiers and Kashgar. Fought in Russo-Jap War, 1904. In the World War, in 1915, commanded Grenadier Guards. Later commanded northern forces. 1916, Governor of Turkestan. In the Turkish War (1877-1878) he distinguished himself, obtaining the rank of a colonel. In 1898 he was appointed minister of war.

KURO SIVO, or **JAPAN CURRENT,** the Gulf Stream of the Pacific; is the offspring of the great equatorial current, flows past Formosa, Japan, the Kuriles, the Aleutian Islands, and thence bends S. to California. It is much inferior to the Gulf Stream, both in volume and high temperature.

KURSHOUMLIA or **KURSUMLIJA,** a village in the province of Toplica, on the river Toplica, 35 miles S. W. of Nish, Siberia. It is sustained largely by agriculture and has a population of 2,000. Some heavy fighting occurred in and around the village during the invasion of the Austro-Germans in the World War.

KURSK, the chief town of the Russian province of Kursk. The chief industry is tanning; but soap, tobacco, candles, and spirits are also manufactured. Kursk is celebrated for its orchards and has an observatory. Pop. 83,000. Near the town a fair is held after Easter, when vast quantities of goods are disposed of, the chief being cotton, silk, and woolen fabrics, sugar, tea, leather, horses, etc. The province of Kursk, in the middle of south Russia, contains 17,931 square miles, three-fourths fertile arable land (black earth). Pop. about 3,000,000.

KURU, a noted legendary hero of India, the contests of whose descendants form the subject of two great Indian epics.

KURUMAN, a mission station of the London Missionary Society in Bechuanaland, about 130 miles N. W. from Kimberley. It was for many years the scene of the labors of Dr. Moffat and Livingstone.

KUSATSU (kö-sats'), a resort in Japan where are numerous hot springs impregnated with minerals. Invalids frequent the place in large numbers.

KUSI, a considerable tributary of the Ganges, rises in the Nepal Himalayas, to the N. W. of Mount Everest, and flows generally S. Its length is about 325 miles, and it is navigable, by boats of 10 tons, to the Nepal frontier. Its bed is constantly shifting to the W.

KÜSTRIN (küst'rin), a town of Prussia and a fortress of the first rank; situated in the midst of extensive marshes at the confluence of the Warthe with the Oder; 51 miles E. of Berlin. It was first fortified in 1535–1543, and was held by the French from 1806 to 1814. Küstrin is also an important railway center.

KUTABMINAR (kö-tab-mēn-är'), a column of red sandstone, erected at Delhi, India, to commemorate the victory gained by the Mussulmans over the Rajputs in 1193. This conquest gained for them the sovereignty of the Punjab. The column is 50 feet in diameter at the base and 13 at the top. Its face is covered with inscriptions from the Koran.

KUT-EL-AMARA, a town on the Tigris river, in Mesopotamia, where the channel Shatt-el-Hai leaves the Tigris and flows to the Euphrates at Nasiriyeh, the reputed site of the Garden of Eden. Scene of fighting in World War, the British defeating the Turks and entering the town Aug. 29, 1915. However, April 9, 1916, the British troops in the town, under General Townshend, surrendered to the Turks. Meanwhile, however, the British had been gathering together a new army, made up mostly of East Indian forces, and efforts were made to

retake the town. Ascending the Tigris the British forced the passage of the Shatt-el-Hai on Dec. 13, 1915, and after repeated attacks, succeeded in inclosing the part of the Turkish army on the right bank of the Tigris, opposite Kut-el-Amara, Feb. 11, 1917. A few days later the Turks evacuated this bank altogether, and on the 23rd the British effected the crossing of the river above Kut-el-Amara. On the same day General Cobbe stormed the Turkish lines at Sanna-i-yat. These operations forced the Turks to abandon Kut-el-Amara and the British were thus able to re-enter it unopposed. The Turks lost at Kut-el-Amara and during the subsequent retreat 20,000 men and many guns. See WORLD WAR: TURKEY.

KUVERA (kövē'rä), in Hindu mythology, the god of wealth. He resided in the splendid palace of Alaka, on Mount Meru, and is borne through the sky by four attendants on a radiant car given to him by Brahma. He has no temples dedicated to him, and no altars. On his head is a richly ornamented crown, and two of his four hands hold closed flowers of the lotus.

KWALHIOKWA (kwäl-ē-ōk'wä), a tribe of North American Indians of the Athabascan stock, formerly living on Willopah river, Washington, near the Lower Chinook Indians.

KWANGSI, a province of China; mountainous, and watered by the numerous branches of the Tao or Sikiang. Rice is largely grown, and gold, silver, and mercury are mined. Area, 78,250 square miles; pop. about 5,400,000.

KWANGTUNG, the most S. province of China, bordering on the Gulf of Tonkin and the China Sea. The N. part is mountainous, but the S. region is about the most fertile in China. It includes Hainan and a number of smaller islands along the coast. The capital is Canton; area, 79,456 square miles; pop. about 24,000,000.

KWAN-YIN, a divinity of the Buddhists, regarded as the pitying god.

KWAPA, or QUAPAW, a tribe of the Dhegiha division of North American Indians. They gave themselves the name of Ukaqpa, meaning "those who went down stream." Their total number is about 232; some of them live in the Indian Territory and others are in Oklahoma. The Kwapa were called Akansa by the Illinois, from which comes the name Arkansas.

KWEICHAU, a province of China. It is rough and mountainous, produces rice, tobacco, and timber, and has mines of copper, iron, lead, and mercury. Area, 64,554 square miles; pop. about 10,000,000.

KWEIYANGFU, capital of the Chinese province of Kweichau. Although the smallest of the capitals of China it is beautifully situated among the hills, the summits of which are frequently adorned by marble temples. The city itself is surrounded by walls of white marble. It is one of the most prosperous of the inland Chinese towns.

KYANITE, a mineral composed of silicate of alumina. It occurs in long prismatic crystals belonging to the triclinic system. The mineral is sometimes colorless, but is usually pale blue, or pale blue mixed with white. It is transparent or translucent, but sometimes opaque, owing to the presence of impurities.

KYANIZE, a process to prevent the decay of wood, cordage, or canvas, by saturating it with a solution of corrosive sublimate in open tanks or under pressure.

KYD, THOMAS, an English dramatist; flourished in the 16th century. He was one of the most popular English writers of tragedies before Shakespeare, and helped prepare the way for him. His two most successful plays were "The Spanish Tragedy, or Hieronimo," and "Oratio." They were very popular and were frequently acted, not only in England, but in Germany and in Holland; but the former was much ridiculed by Shakespeare and his contemporaries for its bombastic rant.

KYOTO. See KIOTO.

L

L, l, the 12th letter in the English alphabet, generally regarded as a semivowel or a liquid. In shape it has been derived from that of the Oriental *lamed.* L. has only one sound in English, as in love, long, like, etc. L is frequently interchanged with r, of which it is considered to be a later modification: thus the Latin *lavendula* has become in English lavender; the Latin *peregrinus* (French *pelerin*) has become the English pilgrim; the Latin *sinoplum,* English sinoper. L has become an n, as in postern, Latin *posterula* (Old French *posterle, posterne*). In some Romance words it has been weakened to u, as in hauberk = Old French *halberc,* halbert; auburn = Latin *alburnum.* From several words it has disappeared, as from each = Anglo-Saxon *ælc;* which = Anglo-Saxon *hwylc;* such = Anglo-Saxon *iwylc;* as = Anglo-Saxon *ealswa* (also). On the other hand it has intruded into could = Anglo-Saxon *cuthe, coude;* myrtle = Latin *myrtus;* manciple = Old French *mancipe;* Latin *mancipium;* participle = Old French *participe;* Latin *participium;* syllable=Latin *syllaba.* In Anglo-Saxon l, like r, was frequently preceded by h, which has since been dropped, as in loaf=Anglo-Saxon *hláf;* lot=*hlot,* etc.

As an initial L is used: For book (Latin *liber*), for law or laws, in D. C. L.= Doctor of Civil Law, LL. D.= *Legum Doctor;* in mathematics for logarithm; in music for left: as L. H.= left hand, and in stage directions for left, or prompt side.

As a symbol L is used:

1. In numeration: For 50; with a line drawn above it L = 50,000.
2. In chemistry: For LITHIUM (*q. v.*).
3. In English commercial transactions: For a pound or pounds; as L (usually written £) s. d.=pounds, shillings, and pence.

L railroads, the name given in American cities to the lines of intramural transportation which are elevated above the surface of the earth. The L is a symbolic representation of the first syllable in the word elevated.

LA (lä), in music the 6th of the seven syllables—*ut,* or, *do, re, mi, fa, sol, la, si*—representing the seven sounds in the diatonic scale.

LAAGER, in South African campaigning, a camp made by a ring of ox wagons set close together, the spaces beneath being filled up with the baggage of the company.

LAALAND (lā'länd), or **LOLLAND** (lol'land), a Danish island in the Baltic, at the S. entrance to the Great Belt, 36 miles long by 9 to 15 broad; area 445 square miles. The surface is remarkably flat, and the soil exceedingly fruitful; forests of beech and oak cover upward of 50 square miles. Capital Maribo; largest town Nakskov; pop. of island about 70,000.

LABARUM (lab'-), the standard of Constantine the Great, adopted by him after his conversion to Christianity. It was marked with his seal, which consisted of a monogram of the first two letters (X P) of the Greek name of Christ, interlaced and crossed. Sometimes the X, instead of retaining its ordinary position, is placed upright and surmounted by the P. These letters are often accompanied with the Greek alpha and omega, and circumscribed with a circle.

LA BASSÉE, a town in France, in Nord department, on the Canal of La Bassée, 13 miles S. E. of Lille. It was taken by the Germans in October, 1914, during the great race to the sea. In collecting their forces around Lille the Germans sought to extend their front to La Bassée, and by throwing a barrier across the intervening space to the North Sea attempted to sever the territorial

connection and isolate the Belgian army. Round La Bassée the Second British Army Corps and British Cavalry Corps met the Germans. In June, 1915, the French and British co-operated in taking the offensive north of La Bassée. With the help of Indians and Canadians they won ground along a front of about four miles, penetrating to an average depth, however, of only 600 yards. The fighting oscillated to and fro in this region till the arrival of American forces, and the battle of Chateau-Thierry caused a general retirement of the Germans.

LABEO, a genus of fishes, family *Cyprinidæ*. distingished by their thick and fleshy lips.

LABIALS, letters or characters representing a sound or articulation formed or uttered chiefly by the lips, as b, f. m, p, v.

LABIATÆ (-ā′tē), in botany, labiates, a large order of perigynous exogens, alliance Echiales. It consists of herbaceous plants or undershrubs, with four-cornered stems, opposite leaves without stipules, covered with receptacles of aromatic oil. Akin to *Verbenaceæ* and the *Boraginaceæ*. Distribution wide. They abound especially between lat. 40° and 50° N. They constitute ½₁ the flora of France, and ½₈ that of Germany. No poisonous plant belongs to the order, though there are 120 genera and about 2,500 known species.

LABIUM (Latin, "a lip"), in zoölogy, a term applied to the lower lip of the insects and other *Arthropoda*, the upper part being called the labrum. The term is also applied to the inner lip of the shell of univalve mollusks; the outer lip being the labrum.

LA BOISELLE, a village of France, near Contalmaison, which saw much fighting during the battle of the Somme in July, 1916. The battle was begun by the Tenth and Third British Corps, and though there was local success it ended in general failure and much loss. The village was taken by the British on July 5, but continued a greatly contested point to the end of the war.

LABOR, in political economy, may be defined as effort for the satisfying of human needs. It is one of the three leading factors in production, the other two being land (or natural objects) and capital; and it is more fundamental than capital, which originally is the result of labor.

A distinction insisted upon by many economists is that into productive and unproductive labor. The former consists of those kinds of exertion which produce utilities embodied in natural objects. Unproductive labor, like that of the musician, while both useful and honorable, does not add to the material wealth of the community. Labor directly employed in rendering natural objects serviceable to man may in the language of political economy be distinctively called productive. Yet the physician or teacher may be indirectly most productive, inasmuch as they increase the efficiency of the workman by promoting his health and intelligence.

The social and legal forms in which labor has appeared have also varied with the progress of civilization. In the early stages the labor of the chase, fishing, etc., was performed by the men, while the drudgery devolved on the women and slaves. It was not till the agricultural stage was reached that conquering tribes spared the conquered in order to utilize their services as workers. Ancient civilization was based almost entirely on compulsory labor. The pyramids and other great works of Egypt and Babylonia were possible only because governments could command forced labor on a colossal scale. The more highly developed societies of Greece and Rome rested on the same basis.

It is a disputed question how far free labor existed in the early Teutonic settlements of England and other countries. The mediæval organization of society, where definitely constituted, rested on serfdom—*i. e.*, the mass of the workers were attached to the soil, and rendered fixed services in labor, in kind, and latterly in money. While the condition of serfdom greatly varied, there can be no doubt that its tendency was to depress the free and raise the servile cultivators to something like a common level. The free workers of the towns organized themselves in GUILDS (*q. v.*). In the course of the 14th century serfdom began to pass away in England. Its disappearance was followed by enactments for the regulation of labor in the interest of the ruling classes. The first, and one of the greatest examples of this was the "Statute of Laborers." The main object of this statute, which was passed in 1349, was to fix the amount of wages; and it was superseded by a statute of Elizabeth which, besides ordaining an apprenticeship of seven years, empowered the justices in quarter sessions to fix the rate of wages both in husbandry and handicrafts. This act of Elizabeth was not repealed till 1814.

Toward the close of the 18th century the effect of the industrial revolution was to organize labor in large factories and

similar undertakings; and in the early decades of the 19th the growing ideas of freedom had begun to make other great changes in the condition of the workers. The right of combination received in 1824 was utilized in the formation of trades-unions and co-operative societies, and the admission of the workingmen to the franchise has given them a share in the political life of the country. The emancipation of agricultural labor from serfdom, which was effected in France at the Revolution of 1789, was not completed in central Europe till 1848, and in Russia not till 1861. Laws for the regulation of labor are now intended not to fix wages as formerly, but to protect the weaker class of workers.

LABOR, AMERICAN FEDERATION OF, an association composed of about 80 national labor organizations, embracing about 7,000 local unions. It was organized at Columbus, O., in 1886. In 1905 the Socialists withdrew and formed other organizations, but they have since made various efforts to control the association, without success. The Federation was successful in getting Congress to pass a law declaring that labor was not a commodity to be handled about but a human entity. The Federation showed patriotic ardor during the Great War and helped the government.

LABOR CONGRESSES, meetings of the delegates representing organized labor. While there have been frequent congresses of labor of a single nation there have been but few international labor congresses. The first one, held at Geneva, Switzerland, in 1866, was very moderate in the tone of its demands, contenting itself with approving of the alliance among workers to better their condition, and recommending technical education and the establishment of mutual credit organizations. The Second International Labor Congress was held at Lausanne the next year and opposed the co-operative societies and advocated the taking of active steps to secure for the workers full political rights. The Third International held at Basel in 1869 is the most famous of all because of the radical nature of its pronouncements. More representative of international labor than any previous congress it was certainly more extreme than its predecessors. In addition to declaring in favor of the government ownership of all land and the application of the single tax theory it adopted this revolutionary motion demanding "the destruction of all States, national and territorial, and on their ruins the founding of the International State of Laborers." The later meetings of the International are not known by their numbers. That held at The Hague in 1872 was featured by the break between Marx and Bakunin, the celebrated exponent of the anarchists. When the Socialists became more numerous they began to dominate the labor congresses at the expense of the more conservative trade unionists. At one of these congresses, May 1st was declared to be a holiday in honor of workers of all lands. The observance of this day has since been very general in Europe, although in America, where the Socialist movement has not made serious headway, the first Monday in September is observed as a national Labor Day. In 1912 the International Congress, meeting at Basel, condemned the Balkan War and tried to unite the workers of all lands in a demonstration against it. The European War of 1914 came too suddenly to permit of any concerted plan to stop it, moreover the excessive wave of national patriotism which swept over all nations seemed for the time to deny the international character of the labor movement. Attempts were made, however, during the war to hold an International Labor Congress. The most important was the one proposed to be held at Stockholm, Sweden, in the summer of 1917. As the Germans were at that time anxious for peace there was little difficulty in securing passports for their delegates. But the Allied Governments looked askance at the proposal, the United States labor delegates refusing to attend if the Germans were present. Kerensky, the Russian Premier, alone of all the Allies favored the Congress. After the Armistice was signed a Labor congress was held at Geneva where German as well as delegates from the Allied countries were present. The critical question here was the extent to which the Bolsheviki should be encouraged. Here the Congress was so hopelessly divided that it contented itself with demanding peace with Russia and the abandonment of the blockade.

LABOR DAY, a legal holiday, by State enactment only, observed on the first Monday in September in the principal manufacturing and industrial States, when ordinary labor is suspended, and labor organizations parade the streets and hold meetings. In Europe, as a result of the Labor Conference at Berlin in 1890, in many parts of the Continent May 1 to some extent has come to be observed as a labor holiday.

LABOR, DEPARTMENT OF, an office of the United States government,

originally the Labor Bureau (1888), then part of the Commerce and Labor Department (1903), but a separate department since 1913. The principal industrial States have labor bureaus.

LABORATORY, a building or workshop designed for investigation and experiment in chemistry, physics, etc. It may be for special research and analyses, or for quite general work. To the former class belong the laboratories which are attached to dyeworks, color works, chemical, and similar works. Laboratories are also attached to mining and metallurgical schools, mints, arsenals, etc.

LABORI, FERNAND, a French lawyer; born in Rheims, France, April 18, 1860; was educated in Germany, England, and Paris, and called to the bar in 1884. Subsequently he was elected Deputy for Rheims, in 1893, and took part in many famous cases, notably that of the Dreyfus appeal. He was counsel for the defense in the Humbert and Madame Caillaux cases. Author of an "Encyclopedia of French Law," published in 12 volumes. He died in 1917.

LABOR LEGISLATION, laws passed to regulate employment in favor of industrial workers. The necessity for such legislation first made itself felt when the invention of steam driven machinery, in Great Britain, in the early part of last century, radically caused a change in the system of production. As a result of these changes manufacturing, which had previously been carried on by the individual handicraftsmen in their homes, was concentrated in large factories, where many men, women and children were gathered to attend to the machinery installed in the factories. This made the workers entirely dependent on the owners of the machines and introduced the wage system. Taking advantage of this economic power, the employers, ever anxious to increase their profits, competed with each other, not only in reducing wages, but in employing women and children and lengthening their working hours, sometimes amounting to fourteen a day.

The first to voice a protest against these conditions was Robert Owen, himself part owner and director of a large textile manufacturing plant, in New Lanark, Scotland. Taking charge of the factory, he found children under ten years of age being worked ten and twelve hours a day, with deplorable results to their moral and physical condition. He at once set an example by reducing the hours of daily labor to ten, for adults, and took the children out of the factory altogether. Thereupon he demanded that other employers do likewise, and when they refused to comply, began an agitation for parliamentary enactments compelling them to do so. His efforts bore fruits in the famous factory acts, the first legislation in favor of labor, and later serving as models for similar laws in other countries. The first of these was passed in 1819, whereby working hours were limited to twelve hours a day for persons under eighteen, while the employment of children under nine was prohibited entirely. Further enactments extended this class of legislation and provided for a system of inspection whose object was to enforce sanitary conditions in the factories.

In this country, naturally, labor legislation came long after it did in Great Britain, because of the later development of manufacturing. With the growth of our vast industries during the past generation, however, labor legislation has progressed at an equal pace and laws for the regulation of working conditions in the United States are now very little behind those of other industrial countries.

In the main labor legislation has been left to the individual States, the Federal Government interfering only where national services are concerned, or in the case of such industries as are covered by the Interstate Commerce laws, such as the railroads.

State legislation for the regulation of working conditions may be classified under several heads. One of these is the insurance of workers against industrial accidents and the liability of employers for compensation to those that have been injured. By common law it was formerly generally accepted that the employer was liable to grant compensation when it could be proved that the injury was not due to the negligence of the workingman injured, or through the negligence of a "fellow servant." Thus the burden of proof was on the injured worker, which was usually where it remained, as it was generally impossible to prove that the accident was due to the negligence of the employer. Gradually one State after another passed special laws shifting the burden of proof to the employer, forcing him to prove that the accident was actually due to the negligence of the injured party. Together with this class of legislation there have appeared laws providing for insurance against injuries. In fourteen states insurance is compulsory; in eight it is based on compensation to the extent of two-thirds of the wages of the injured;

and in eighteen States it is based on compensation ranging from 55 to 65 per cent. of the wages paid.

Another class of legislation fixes the hours of labor. Here the Federal Government, through its power of taxation, has been able to prohibit the employment of children under fourteen in factories, and under sixteen in mines. In many States legislation has been passed to limit the hours of labor, especially in dangerous occupations. Stringent laws have also been passed enforcing sanitary conditions, notably in the textile trades in New York. Other samples of legislation are shown in Ohio, where women are not allowed to be employed at any work involving the lifting of loads more than twenty-five pounds in weight; in Missouri, where women may not be employed three weeks before or after childbearing; in Indiana, where in certain industries the employers are compelled to afford gas masks to their employees, on account of the noxious fumes incidental to employment.

"Minimum wage" laws form another class of legislation, whereby the downward tendency of wages are fixed. Fifteen states and territories, and the District of Columbia, in 1920, have passed laws fixing a minimum wage.

The international aspect of labor legislation is shown in the Covenant of the League of Nations, one provision of which enumerates nine principles to be followed by all the members of the League; first, the fundamental principle that labor is not a commercial commodity; the right of association; an adequate living wage; the eight hour day; a weekly rest of twenty-four hours; the abolition of child labor; equal compensation for men and women; and inspection by women as well as men.

LABOR ORGANIZATIONS, the banding together of industrial workers for mutual protection against the oppressive action of employers, and for aggressive action in bringing about better working conditions, better wages and shorter hours, etc. Such organizations were first formed in Great Britain after the invention of steam-driven machinery brought about the factory system of production in manufacturing, and were then forbidden by act of Parliament. During this period of prohibition the workingmen organized secretly and often resorted to terrorism in enforcing their demands. Eventually this act was repealed and labor organization progressed at a normal rate.

The first labor organizations in the United States appeared in the early thirties of last century, the various trade unions joining together into municipal and district federations. These bodies also participated in politics, and one, in New York City, sent its president to Congress in 1833. An attempt was then made to form a national labor party, generally known then as the Loco-Foco Party. In New England a broader form of organization was formed, in the late thirties and the early forties, known as the Farmers, Mechanics and Workingmen's Association, with central headquarters in Boston. Another organization was the New England Workingmen's Protective Union, organized on a basis somewhat similar to a fraternal order, with local chapters in each community. This latter fraternity, however, emphasized co-operative buying more than trade union action, and when its commercial enterprises failed, shortly before the Civil War, it too went to pieces.

Shortly after the Civil War a nationwide labor organization was formed, known as the Noble Order of the Knights of Labor, also assuming the form of a fraternal order. This body acquired a strong membership all over the industrial sections of the country during the eighties. Its leadership was extremely radical, and desired to bring about a socialistic order of society, not through politics, but through co-partnership and co-operative enterprises. It was this program which brought about the ultimate destruction of the organization, as the co-partnership enterprises proved themselves inherently impractical and by their failures inspired the rank and file with a sense of discouragement. At a later date the leaders turned their attention to politics and, with the agricultural elements of the Middle West, formed the Populist Party. The failure of this political organization brought about the final decline of the Knights of Labor.

Meanwhile, in the early nineties, a tendency toward trade unionism manifested itself, and eventually resulted in the American Federation of Labor, which is the dominating form of labor organization in the United States at the present day.

Labor organizations, as a whole, may be divided into two distinct classes, or phases; trade unionism, and industrial unionism. Trade unionism, or crafts unionism, as it is sometimes called, is of British origin. Under this form the workers are organized in bodies according to their trades, regardless of location. Thus, on a single house the members of twenty different labor organizations may be employed.

Industrial organization, which is of American origin, is a general body of all the workers, banded together regardless of what their trades may be. The early American labor organizations, and the later Knights of Labor, were of this pattern. The present day representative of this form of organization is the Industrial Workers of the World, whose slogan is "one big union."

Between these two forms of organization there has been subject for much controversy in the labor world. On one side it is contended that trade unions are narrowly selfish, in that each body seeks only benefits for itself, and is exclusive in its ideals. This contention is supported by the fact that trade unions are inclined to keep down the membership of their organizations by high initiation fees and by forcing the employers to limit the number of apprentices in each shop or factory, the theory being that the fewer members there are in one trade organization the higher wages will be. It will be obvious from this that trade unionism is almost entirely limited to skilled workers, and, indeed, this is the basis for another charge brought against trade unionists; that they have no regard for the welfare of the unskilled workers.

Industrial unionism, on the other hand, takes in skilled and unskilled alike. The Industrial Workers of the World, as a matter of fact, are largely composed of the unskilled, most of them being itinerant workers, commonly called "hoboes."

The present day tendency, since the European War, is strongly in the direction of industrial unionism. The British workers have frankly copied the methods of the American I. W. W., though only to a limited extent, in that all the workers of a certain industry are organized together, regardless of what their particular functions may be. An outstanding illustration of this may be found in the British railway workers, the British miners and the transportation workers, who again have federated and formed what is known as the Triple Alliance, the most powerful body in British labor organization. An American example of this limited form of industrial unionism may be found in the United Mine Workers of America, who comprise all the workers in the coal mining industry in America. Another example is in the Western Federation of Miners.

LABOR PARTY, BRITISH, a political party in Great Britain which has for its objects the formulation of reforms to benefit the working class and the election of members to Parliament to enact those measures into law. The origin of the party dates from February 1899 when the Trade Union Congress appointed a Labor Representation Committee to secure the election to Parliament of men favorable to labor. J. Ramsay Macdonald was chairman of the committee and he has never ceased to be an active worker in the ranks of labor. The success of the work of this committee led other organizations such as the Fabian society and the Independent Labor Party to unite with it under the title of the British Labor Party. This was effected in 1906 and in that year 30 out of the 50 candidates endorsed were elected. When the elections of 1910 were announced the Labor Party group was seen to hold the balance of power in the House of Commons, since Liberals and Conservatives were so nearly equal in numbers. When the war was declared the majority of the Labor party supported the government, although a number of the Independents refused. When the Coalition ministry of Mr. Lloyd-George came into power in 1916 Mr. Arthur Henderson, a prominent member of the Labor Party, became one of the inner circle of the new government. About a year later, due to his opposition to Lloyd-George's Russian policy and his approval of the Stockholm Conference, Henderson resigned and with his resignation the Labor Party became more and more hostile to the Coalition. The party published a pamphlet dealing with war aims and reconstruction which while pleasing to many liberals seemed to many to lack patriotism and to favor extreme Socialist ideas. Finally at a congress of the Labor party in 1918 it was decided to end the truce with the Government and to enter the general elections to be held Dec. 14, 1918, as a separate political party. The elections resulted in an overwhelming majority in the House of Commons for Lloyd-George and the Coalition government, the Labor party electing but 65 members against the government's 461. The encouraging feature was that Labor had displaced the Liberals as the main opposition party. Further encouraging signs soon began to appear. The by-elections held during 1919 and 1920 showed a great reversal of opinion among the electorate, resulting in three-fourths of these elections going against the government and in favor of Labor. Arthur Henderson, defeated in the election of December, 1918, was returned in one of these by-elections. Thus strengthened by effective leadership in the House of Commons the Labor group exerted a considerable influ-

ence on the government in favor of peace with Russia and a mitigation of the terms of the treaty of Versailles with Germany.

LABOUCHÉRE, HENRY (lä-bö-shār′), an English journalist and politician; born in London, 1831. He was in the diplomatic service, part of the time at Washington, in the United States, and a member of Parliament. An advanced republican, he used "Truth," the journal established by him in 1876 as a society and political organ, for the promulgation of his ideas. He wrote "Diary of a Besieged Resident in Paris" (1871). Sat in Parliament for Middlesex 1867-1868. Northampton 1880-1906. Died in Florence, 1912.

LABOULAYE, ÉDOUARD RENE LEFEBVRE DE (lä-bö-lā′), a French jurist and historian; born in Paris, Jan. 18, 1811. He was appointed Professor of Comparative Jurisprudence in the Collège de France in 1849, deputy in 1871; life senator in 1875. His greatest work outside of the field of jurisprudence is a "Political History of the United States, 1620–1789" (3 vols. 1855–1866). He wrote also "The United States and France" (1862) and the humorous satiric novel "Paris in America" (1863). His novel of "Prince Caniche" (1868) reached a 20th edition. But by far his best-known works of fiction are the three series of "Blue Stories"—tales of fairies, elves, enchanters, etc. He also wrote "Contemporary Studies of Germany and the Slavic States" (1856); "Religious Liberty" (1858). He died in Paris, May 25, 1883.

LABRADOR, the N. E. peninsula of the North American continent, lying between Hudson Bay and the Gulf of St. Lawrence, extending from lat. 49° to 63° N., and from lon. 55° to about 79° W.; greatest length from the Strait of Belle Isle to its N. cape, Wolstenholme, 1,100 miles; area, 120,000 square miles; pop. about 4,100, collected chiefly at the Moravian missionary stations—Nain (1770), Okkak, Hebron, Hopedale, etc. The Atlantic coast is stern and precipitous (1,000 to 4,000 feet high), entirely destitute of vegetation, deeply indented with narrow fjords, and fringed with chains of rocky islands. The inner parts have been but very imperfectly explored; the greater part consists of a plateau, mostly covered with fine forest trees, firs, birches, etc. Numerous lakes, including Mistassini, also exist inland, and, connecting with the rivers, afford in summer continuous waterways for great distances. The only inhabitants of this interior plateau are Cree Indians, nomads. There are numerous rivers. The Grand Falls on Grand river are believed to be among the largest in the world. These rivers abound in fish, especially salmon and white fish. The principal fur-bearing animals are bears, wolves, foxes, martens, otters, beavers, lynxes, etc., which are trapped by the inhabitants in winter. Of the mineral resources little is known; but iron and LABRADORITE (*q. v.*) are certainly abundant. The climate on the coast is very rigorous, owing mainly to the ice-laden Arctic current which washes the shores. The summer lasts three months. The winter is dry, bracing, and frosty. Since 1809 the coast region has been annexed for administrative purposes to Newfoundland. The remaining parts of the peninsula are designated the Northeast Territory. By far the most important wealth of Labrador is its fish—cod, salmon, herring, and trout. As many as 30,000 fishermen from Newfoundland, Canada, and the United States visit its fishing grounds in the season. In 1500 a Portuguese navigator, Cortereal, seems to have visited Labrador, and to have given it its name, which means "laborers' land."

LABRADORITE (named from the locality whence first obtained), in mineralogy, a member of the felspar group, in which the protoxide bases are lime and soda, the sesquioxide base being alumina. Colors, gray, brown, greenish; sometimes colorless. The cleavable massive varieties sometimes exhibit, in the direction of the second cleavage, a lively play of color, blue and green predominating, but fire-red and yellow also occur. This phenomenon has not yet received a satisfactory explanation. The colored varieties are sometimes used in jewelry. Called also Labrador felspar.

LABRUS (lā′-), plural, **LABRIDÆ** (lab′ri-dē), a genus and family of acanthopterygious fishes, the species of which are very numerous in tropical seas. The *Labridæ* family (wrasses, or rock fish, as they are also called) are chiefly remarkable for their thick fleshy lips, their large and strong conical teeth, their oblong scaly body, and their brilliant colors. They are further generically distinguished by a single dorsal fin, extending nearly the whole length of the back, part of the rays spinous, and behind the point of each spinous ray a short membranous filament. To this family belongs the black fish, or tautog, *Labrus Americanus*, 6 to 18 inches long, common on the coast of New England, and highly prized as food.

LA BRUYÈRE, JEAN DE (lä brüyār'), a famous French moralist and satirist; born in Paris, August, 1645. Appointed tutor of the dauphin, he spent a large part of his life at the court of Louis XIV. His great work, on which his reputation rests, is "The Characters of Theophrastus, Translated from the Greek, with the Characters or Manners of this Century" (1688). It abounds in wit, shows him to have been an excellent judge of men, and is written in an admirable style. He died at Versailles, May 10, 1696.

LABUAN (lä-bö-än'), an island six miles from the N. W. coast of Borneo; area 30¼ square miles; pop. about 7,000, Malays and Chinese. Besides possessing a good harbor (Victoria), it has an extensive bed of excellent coal. Labuan is an active market for the products of the neighboring islands (Borneo and the Sulu Archipelago)—sago, edible birds'-nests, camphor, gutta-percha, india-rubber, rattans, pearls, tortoise-shells, and beeswax. The island became British in 1846. In 1907 the territory was annexed to Singapore, an island of the Straits Settlements. Capital of Labuan, Victoria.

LABURNUM (-bur'-), a tree of the genus *Cytisus*, the C. Laburnum, natural order *Leguminosæ*, a native of the Alps, much cultivated by way of ornament. It is well and widel known for the beauty of its pendulous racemes of yellow pea-shaped flowers. The seeds contain a poisonous substance called cytisine, and are violently emetic. The wood is much prized by cabinet-makers and turners, being wrought into a variety of articles which require strength and smoothness. The Scotch laburnum of gardens is a form with larger leaves and flowers, which is known as *C. alpinus*.

LABYRINTH, the name of some celebrated buildings of antiquity, consisting of a series of intricate chambers or passages. Of these the most celebrated were the Egyptian, the Cretan, and the Samian. The Egyptian was visited by Herodotus and Strabo, and was reckoned one of the wonders of the world, containing 3,000 chambers. The Cretan labyrinth was supposed to have been built by Dædalus for King Minos, to contain the Minotaur. The only mode of finding the way out of it was by means of a hank or skein of linen thread, which gave the clue to the dwelling of the Minotaur. The Samian labyrinth was constructed in the age of Polycrates (540 B. C.). Other inferior labyrinths existed at Nauplia, at Sipontum in Italy, at Val d'Ispica in Sicily, and elsewhere. Labyrinths called mazes were at one time fashionable in gardening, being imitations, by hedges or borders, of the Cretan; the best known in modern times is the Maze at Hampton Court, near London, England.

LABYRINTHODON (-rinth'-), a genus of fossil amphibians, whose remains are found in the Carboniferous Permian, and Trias formations, those of the Trias being found in England, India, and Africa. They were allied to the crocodile and to the frog, and were 10 to 12 feet long. The name is derived from the labyrinthine structure of a section of the tooth, when seen under the microscope. The hypothetical cheirotherium has been identified with the labyrinthodon.

LAC, or **LAK**, from the Sanskrit *lakshâ* or *laksha*, that is, 100,000. In the East Indies it is applied to the computation of money. Thus, a lac of rupees is 100,000.

LAC, in botany, etc.: (1) A resinous incrustation caused by the parasitic insect *Coccus lacca*. The incrusted sticks are called stick lac. Lac is called also East Indian kino. (2) A white, orange, or other-colored fluid occurring in many plants. (3) A gummy substance produced by *Aleurites lac*. In pharmacy, a decoction of shell lac is much used in India in the preparation of several medicinal oils.

LAC AMMONIACUM (-nī'a-kum), milk of ammoniacum, from its resembling that fluid in appearance. A mixture prepared by rubbing, slowly and perfectly, down a certain quantity of the ammoniacum with water, till the whole, by steady and careful trituration, is suspended in the water. This makes one of the best expectorant mixtures in the pharmacopœia for coughs, colds, and hoarseness.

LACCADIVES (lak'a-dīvz), a group of 14 coral islands in the Arabian Sea; about 200 miles W. of the Malabar coast; between lat. 10° and 14° N.; area, 744 square miles; pop. about 10,000. The cocoanut is the chief plant, and coir (cocoanut fiber) the staple product; this and jaggery, cocoanuts, copra, tortoise-shell, and cowries are carried over to the mainland by the men. The group was discovered by Vasco da Gama in 1499. The N. islands are attached to the Madras district of South Kanara; the rest belong to the rajah of Cannanore, but since 1877 have been administered by the collector of Malabar. The people are Mohammedans of Hindu de-

scent, their language Malayalam, except in Minikoi, which properly belongs to the Maldive group and retains its language.

LACE, an ornamental fabric of threads so interwoven, twisted, braided, and knotted as to form definite patterns, of contrasted open and close structure. It is claimed that the art of embroidery was developed into needle lace early in the 15th century, by Greek refugees, who brought their art from the Ionian Islands to Venice. By the middle of the 17th century lace had become the most desired adornment; and at the time when Colbert introduced its manufacture into France, under royal patronage, in 1660, it was so highly prized that extravagant nobles mortgaged their châteaux to obtain decorations for their boot-tops and jabots for their necks. From then till the introduction of machine-made lace early in the 19th century, lace making remained one of the great industries of Italy, Spain, France, the Netherlands, and the S. of England.

Technically, lace consists of two elements: the pattern, flower, or gimp, which forms the closer-worked and more solid portion of the fabric; and the ground or filling, which serves to hold the pattern together and in its proper place.

Real or hand-made lace is of two distinct varieties: point or needle lace, which is made with a needle and is, in fact, the direct development of embroidery (being the lace of Italy, Spain and their followers); and pillow lace, which is made by the braiding, plaiting, and knotting of threads whose foundations are pins stuck in a cushion or pillow held on the maker's lap (this is the lace of Flanders and the Netherlands). To these two schools of real laces, in which the finest linen threads are the material, have been added machine lace, which imitates with marvelous closeness the more noticeable characteristics of the precious handmade treasures, but utilizes cotton and silk and even metal threads, producing such quantities of beautiful web at such moderate cost as to have practically killed the real lace industry.

LACE BARK, the inner bark of *Lagetta lintearia*, one of the Daphnads. The English name is given because the bark, when macerated and stretched laterally, resembles coarse lace, and in Jamaica, where the tree grows, is made into caps, ruffles, etc. The negroes make durable clothing from it, and the white inhabitants utilize it for ropes and cables. Also the name given in New Zealand to the genus *Philippodendron*.

LACEDÆMON. See SPARTA.

LACERTA (lā-sur-tä) ("The Lizard"), one of the eight constellations added to the original ones by Hevelius in his "Introduction to Astronomy" in 1690, or rather one of the eight which have survived, for he added 10 in all. It is not a conspicuous one, the brightest star being of the fourth magnitude.

LACHES (lash'ez), in English law, a word used to denote negligence or undue delay, such as to disentitle a party to a particular remedy or to relief.

LACHESIS (lak'e-sis), in classical mythology, one of the three FATES (*q. v.*). Also the name of Planetoid 120. In zoölogy, (1) A genus of Crotalidæ. Rattlesnakes or pit vipers. *Lachesis mutus*, the bushmaster of Surinam, Guiana, and Brazil, has the rudiments of a rattle. (2) A doubtful sub-genus of mollusks, genus *Pleurotoma*.

LACHLAN (läk'lan), a river of Eastern Australia, rising in New South Wales, to the W. of the Blue Mountains; total length about 700 miles. It is joined by the Murrumbidgee, the united stream afterward falling into the Murray.

LACKAWANNA, a river which runs through the N. E. part of Pennsylvania and flows into the Susquehanna at Pittston; length about 50 miles. Great quantities of the best anthracite coal are mined in the valleys adjacent to this river.

LACKAWANNA, a city of New York, in Erie co. It is on the Pennsylvania, the Buffalo, Rochester and Pittsburgh, the Lake Shore and Michigan Southern, the Lehigh Valley, and other railroads. Its industries include the manufacture of steel, bridge works, blast furnaces, and coking plants. It has St. John's Protectory, an orphan asylum, and a hospital. Pop. (1910) 14,549; (1920) 17,918.

LACONIA (-kō'ni-ä), a former name for a tract of country granted by royal patent to Ferdinand Gorges and John Mason. It was bounded by the Merrimac and Kennebec rivers, the ocean, and the so-called River of Canada. The present State of New Hampshire formed a considerable portion of Laconia. The colony was of short duration.

LACONIA, a city of New Hampshire, the county seat of Belknap co. It is situated on both banks of the Winnepesaukee river, and on the Boston and Maine Railroad. It is an attractive summer place and has also important in-

dustries, including the manufacture of cars, lumber, hosiery, machine shop products, paper boxes, knitting machinery, etc. It has a State home for feeble-minded children, a home for the aged, opera houses, a hospital, a public library and park. Pop. (1910) 10,183; (1920) 10,897.

LACONIA, a territory in ancient Greece. See SPARTA.

LACONIC, a term applied to the style adopted by the Spartans, or Lacedæmonians (whose country was called Laconia), who endeavored to confine themselves to a sententious brevity in speaking and writing.

LACONICUM (-kon'-), among the ancients, the semi-circular end of a bath; a stove, for the purpose of heating the sudatories or sweating-rooms of a bath. The use of the dry bath is said to have been prevalent among the Lacedæmonians.

LACORDAIRE, JEAN BAPTISTE HENRI (lä-kôr-dār) **(FATHER LACORDAIRE)**, a distinguished French preacher; born near Dijon, France, May 12, 1802. He studied at Dijon, and became an advocate, settling at Paris in 1821. He was at that time a believer in Voltaire, but soon studied theology at the seminary of St. Sulpice and was ordained priest in 1827. He became joint editor, with M. de Montalembert and Lamennais, of a new journal entitled "The Future" (1830), suppressed in 1832 by Pope Gregory XVI. He soon after began to distinguish himself as a preacher, and the pulpit of Notre Dame was opened to him. In 1839 he entered the Dominican order at Rome; and immense excitement was produced by his reappearance at Notre Dame in 1841, in the white dress of his order and with the shaven head. His eloquence attracted and charmed crowds at Paris, Lyons, Bordeaux. He was chosen member of the Constituent Assembly of March, 1848, and appeared there in his Dominican habit. He preached his last great sermon in Paris in 1853, and was soon after appointed director of the college of Sorrèze. His reception at the French Academy took place in 1860. The writings of Father Lacordaire consist chiefly of a "Life of St. Dominick"; "Debates"; and "Funeral Eulogies." He died in Sorrèze, Nov. 22, 1861.

LACQUER or **LACKER**, primarily, a varnish composed of shellac dissolved in alcohol and colored. It is applied to wood, to papier-maché, and to metals to protect them from rust and improve their color. The term is also applied to compositions containing turpentine, resin, etc. Turmeric, dragon's blood, gum sandarach and red sanders are frequently employed in red and gold-colored lacquers.

LACRETELLE, JEAN CHARLES DOMINIQUE DE (lö-kru-tel'), a French journalist and historian; born in Metz, Sept. 3, 1766. He was attracted to Paris on the outbreak of the Revolution; but there, he helped to edit "Le Journal des Débats" and "Le Journal de Paris." He managed to escape the Reign of Terror by enlisting in the army; but soon returned to journalistic work in the capital. In 1810 he was nominated censor of the press, having the year previous been appointed Professor of History in the University of Paris. This post he held to 1853. From 1811 a member of the French Academy, he became its president in 1816. He wrote "History of the Eighteenth Century" (1808); "Historical Summary of the Revolution" (1801–1806); "History of France during the Religious Wars" (1814–1816). He died near Mâcon, France, March 26, 1855.

LACROIX, JULES (lä-krwä'), a French poet, dramatist, and novelist; brother of P. Lacroix; born in Paris, May 7, 1809. He wrote numerous romances; a volume of poetry "Les Pervenches" (The Periwinkles: 1838); several dramas; and "The Year of Infamy" (1872), a collection of patriotic poems. He died Nov. 10, 1887.

LACROIX, PAUL, pseudonym **P. L. JACOB, BIBLIOPHILE**, a French miscellaneous writer; born in Paris, France, Feb. 27, 1806. Besides actively assisting in more than one journalistic enterprise, he wrote romances, plays, books on history, manners and customs, and edited memoirs, biographies, etc. His most valuable productions were a series of works on the habits, manners, customs, costumes, arts, sciences, and intellectual condition of France from the Middle Ages down to the 19th century. He wrote two elaborate works on the "History of Prostitution," published under the name of Pierre Dufour. From 1855 onward Lacroix was custodian of the Arsenal library of Paris, and died in that city Oct. 16, 1884.

LA CROSSE, city and county-seat of La Crosse co., Wis., on the Mississippi river and the Chicago, Milwaukee, and St. Paul, the Chicago and Northwestern and several other railroads; 18 miles S. E. of Winona. It is the farming, manufacturing and dairying trade cen-

ter for Western Wisconsin, Southern Minnesota, and Northern Iowa, has manufactories of agricultural implements, automobile parts, stoves, machinery, and lumber, shingle, and lath mills. The city contains the Asylum for Chronic Insane, St. Francis and United States Marine Hospitals, and Washburn Public Library; and has electric light and street railroad plants, National and other banks, many churches, daily and weekly and monthly periodicals. Pop. (1910) 30,417; (1920) 30,363.

LA CROSSE (lä kros), a Canadian field game played with a ball and a long stick (five or six feet) of light hickory, bent at the top like a bishop's crozier (French *crosse*). Strings of deer-skin are stretched diagonally across the hooked portion of the crosse in different directions, forming a network—not so tightly as in a battledore or tennis racquet, nor so loosely as to form a bag. Only one ball is employed, made of india-rubber, and eight or nine inches in circumference. Posts or poles about six feet high, with a small flag at the top of each, complete the equipment. The players are usually 12 on each side, but their number, as well as the distance of the goals apart, is nearly optional. The object of the game is for one side to drive the ball through their opponents' goal. The ball must not be touched with the hand or foot, but is scooped up from the ground with the bent end of the crosse, on which it is carried horizontally, while the player runs toward one of the goals, trying to dodge his antagonists. If it seems prudent, he pitches the ball off his crosse toward one of his own side who may be in a better position to carry it toward the goal. It is played in the United States.

LACTANTIUS, FIRMIANUS (lak-tan′shi-us fur-mi-ā′nus), **LUCIUS CÆLIUS**, or **CÆCILIUS**, an eminent father of the Church, lived at the beginning of the 4th century. He was by some esteemed an African and by others a native of Fremo, in Ancona. He studied rhetoric under Arnobius, and by his "Symposium" he obtained such renown that Diocletian appointed him to teach rhetoric in Nicomedia. Subsequently he was appointed tutor to Crispus, the son of Constantine. He wrote many works in vindication of Christianity, from the style of which he has been honored with the name of the "Christian Cicero." His principal work is the "Divine Institutions," in seven books.

LACTEALS, an anatomical term. The lacteals received the name of *vasa lactea* in 1622 from Asellius, their discoverer. From the specific word *lactea*, given to distinguish vessels of this class, came the word lacteal. The lacteals and lymphatics properly constitute one system of vessels which convey a fluid or fluids from various organs of the body to the veins near their terminations in the heart.

LACTIC ACID, in chemistry, $C_3H_6O_3 = CH_3 \cdot CH \cdot (OH) \cdot CO \cdot OH$. a monobasic, diatomic acid, discovered by Scheele in sour milk, and first recognized as a distinct acid by Berzelius. It occurs in small quantity in the animal organism, especially in the gastric juice, and, under certain circumstances, is formed in the fermentation of some sugars. It is readily prepared by adding to a solution of grape sugar a small quantity of powdered old cheese, mixed with sour milk, and allowing the mixture to stand for 8 or 10 days at a temperature of 40° to 45°. It is a colorless, inodorous liquid of syrupy consistence, possessing an intensely sour taste. Lactic acid forms salts by the replacement of hydroxylic hydrogen by metals. Zincic lactate, C_6H_{10} $ZnO_6 3H_2O$, is the most characteristic salt of lactic acid. It crystallizes in colorless, monoclinic prisms, slightly soluble in cold water, very soluble in boiling water, but insoluble in alcohol.

LACTIC FERMENT, a minute organism which, under the microscope, is seen to consist of small elliptical cells, generally detached, but sometimes occurring in chains of two or three. It is developed in milk, when it is allowed to stand for some time, and is the cause of the milk becoming sour, the sugar of the milk changing into lactic acid.

LACTOMETER (-tom′-), or **GALACTOMETER**, a species of hydrometer, graduated to show the comparative specific gravity and consequent value of different samples of milk. The instrument is a good evidence of the specific gravity of milk, and the specific gravity is a probable, but not positive, evidence of quality. Taken in connection with the per cent. glass, which measures the per cent. of cream that rises, it is nearly a positive indicator of pure and watered milk.

LACTOSCOPE, an instrument, invented by Donne of Paris, for assisting in determining the quality of milk by ascertaining its relative opacity.

LACTOSE, in chemistry, $C_6H_{12}O_6$, a sugar, isomeric with dextrose, formed from milk sugar by treatment with ferments or dilute acids. It resembles dex-

trose in most of its reactions, but is distinguished from it by giving no compound with sodic chloride, and by yielding lactonic and mucic acids instead of saccharic acid when oxidized by nitric acid. Lactose is the first aldehyde of dulcite.

LACUNA (lā-kū'nä), plural **LACUNÆ** (-nē), in human anatomy, open spaces, prolonged into canaliculi or delicate tubes finer than the smallest capillary vessels, occurring in bone. The lacunæ have an average length of 1-1800 of an inch, and are about half as wide and a third as thick. In botany (1) Singular, Link's name for an air-cell in a plant. (2) Plural, Small hollows or pits upon the under surface of the thallus in a lichen. In zoölogy, a genus of *Littorinidæ*. Sixteen recent species are known and one fossil, the former from Norway, Great Britain, Spain, etc., the latter from the Scotch glacial beds.

LADANUM (lad'-), in chemistry, $C_{20}H_{30}O_3$; labdanum; an odorous, resinous substance which exudes in drops from the leaves and twigs of the *Cistus creticus*, a shrub growing in the island of Candia and in Syria. It is a dark-colored, tenacious resin, somewhat moist, exhaling an odor like that of ambergris. It was formerly much used for making stimulating plasters. Ladanum in sticks is prepared in Portugal, Spain, and the S. of France by boiling the leaves and branches of *Cystus ladaniferus*.

LADAS, Alexander's messenger, noted for his swiftness of foot.

LADD, GEORGE TRUMBULL, an American educator; born in Painesville, O., Jan. 19, 1842. He was educated at Western Reserve College and Andover Theological Seminary; was pastor of Spring Street Congregational Church, Milwaukee, Wis., in 1871–1879; and Professor of Philosophy at Bowdoin College in 1879–1881, when he assumed the chair of philosophy at Yale. His works include: "Doctrine of Sacred Scripture" (1883); "Elements of Physiological Psychology" (1887); "Psychology" (1894); Philosophy of Knowledge" (1897); "Essays on the Higher Education" (1899); "Philosophy of Conduct" (1902); "What Can I Know" (1914); "Intimate Glimpses of Life in India" (1919). He was decorated by the Emperor of Japan.

LADIES' CATHOLIC BENEVOLENT ASSOCIATION, an organization of Catholic women, established at Titusville, Pa., in 1890, having as its purpose the providing of benefits to be paid to families of members after death. Headquarters are at Erie, Pa., and members are drawn from all over the United States. In 1916 the association had 157,525 members, and 1,253 branches. Its disbursements in death benefits had been $13,640,007.48, with relief benefits of $23,560.

LADISLAS, the name of six Kings of Hungary: LADISLAS I., King of Hungary; born in 1041, succeeded in 1079; died in 1095, and was canonized for his piety by Celestine III., 1198. LADISLAS II., called the Infant, succeeded and died the same year, 1200. LADISLAS III. succeeded 1272, assassinated, after a life of debauchery and a disgraceful reign, 1290. LADISLAS IV., the same as Uladislas V., King of Poland, succeeded his father in the latter dignity, 1435, and was elected by the Hungarians, 1440, killed in battle by the Sultan Amurath, 1444. LADISLAS V. succeeded in the 5th year of his age, 1444, and died suddenly, 1458. LADISLAS VI., son of Casimir IV., King of Poland, and called, according to the Polish form of his name, Uladislas II., became King of Bohemia 1471, and King of Hungary 1490. Died in 1516.

LADISLAS, LADISLAUS, or **LANCELOT**, King of Naples, called the Liberal and Victorious; born in 1376. He succeeded his father, Charles Duras, in 1386. He was previously Count of Provence and King of Hungary. He obtained the latter crown in 1403 during the imprisonment of Sigismund, who compelled him to return to Italy. On the death of his father he was opposed by Louis II., Duke of Anjou, which occasioned some bloody wars. Pope John XXIII. at first espoused the cause of Louis, but afterward took the part of Ladislaus, who, however, marched against Rome, and having taken it, turned his arms on the Florentines, whom he compelled to sue for peace, in 1413. He died in Naples, it is suspected of poison, in 1414.

LADOGA (lä-dō'gä) **LAKE**, the largest lake of Europe; a short distance N. of Petrograd, in Russia, being crossed by the frontier line between that country and Finland; 129 miles in length; 78 in breadth; area, 6,998 square miles. There are numerous islands. The lake receives the waters of Lake Onega and Lake Ilmen in Russia and of Lake Sima and other lakes in Finland; and its own waters are carried off to the Gulf of Finland by the NEVA (*q. v.*). The average depth does not exceed 300 feet, except in the N. W., where over a limited area the depth is about 730 feet. The navigation is exceedingly dangerous

owing to the shallows, sandbanks, and sunken rocks. In order to obviate the difficulties of navigation, canals have been constructed to connect the mouths of the rivers that reach it along the S. and S. E. shores. The principal is the Ladoga canal (70 miles long and 60 feet wide). This canal system forms the thoroughfare for a very extensive traffic between the Volga and the Baltic. Communication by water subsists between Lake Ladoga and the White Sea as well as the Caspian. Two of the islands in the N. W., Valaam and Konevetz, are each the seat of a monastery, founded in 960 and 1393 respectively, which are visited by thousands of pilgrims every year.

LADRONES (la-drōnz'), or **MARIANNE ISLANDS**, a chain of 17 islands in the North Pacific, E. of the Philippines and the Caroline Islands; area, about 500 square miles. They were discovered by Magellan in 1521, who gave them the name of "Ladrones," it is said, from the character of their inhabitants, the word meaning "thieves." GUAM (*q. v.*) is the principal island and embraces nearly one-half of the entire area of the group. On June 20, 1898, Captain Glass, of the United States cruiser "Charleston" took possession of the islands in the name of the United States, and by the peace treaty signed at Paris, Dec. 18, 1898, it was provided that the island of Guam should be ceded to the United States. The remainder of the islands, together with the Carolines, passed from the possession of Spain into that of Germany, Oct. 1, 1899, in consideration of the payment of about $4,187,500.

LADYBIRD (*Coccinella*), a genus of pretty little beetles, generally of a brilliant red or yellow color, with black, red, white, or yellow spots. Adults and larvæ feed chiefly on aphides, and are thus most useful to hop-growers and other agriculturalists. The eggs are laid under the leaves of plants, on which the larvæ afterward run about in pursuit of aphides. In late autumn the surviving adults find safe corners, and hibernate till spring. The family of which the genus is type, *Coccinellidæ*, includes about 1,500 species, of which about 40 are British. One of the commonest forms (*C. septempunctata*) is found over all Europe, and in parts of Asia and Africa.

LADY CHAPEL, a chapel dedicated to the Virgin Mary, frequently attached to a large church. In churches built before 1200 the lady chapel was usually an independent or additional building.

LADY DAY, one of the regular quarter days in England and Ireland, on which rent is generally made payable. It is March 25 in each year; but in some districts Old Lady Day (April 6) is still observed as the term day.

LADY FERN, *Nephrodium thelypteris*, a species with lanceolate, pinnate fronds, the pinnæ again deeply pinnatifid. Also *Athyrium filix fæmina*, a beautiful fern with large, membranous, oblong, lanceolate, twice or thrice pinnate fronds, with close-set pinnules.

LADY'S COMB, *Scandix pecten-veneris*, a branching, pubescent, unbelliferous plant. Perhaps only a colonist where it occurs in cornfields in Great Britain, wild in Continental Europe, South Africa, west Asia to northwestern India. Called also Venus's comb.

LADY'S MANTLE (*Alchemilla*), a genus of herbaceous plants, chiefly natives of temperate and cold climates, of the natural order *Rosaceæ*, sub-order *Sanguisorbeæ;* having small and numerous flowers. The name lady's mantle, signifying "Mantle of Our Lady"—*i. e.*, of the Virgin Mary—is derived from the form of the leaves. The common lady's mantle (*A. vulgaris*) is abundant on banks and in pastures throughout Great Britain. Its root-leaves are large, plaited, many-lobed, and serrated; its flowers are usually of a yellowish-green color. Still more beautiful is the Alpine lady's mantle (*A. alpina*), which grows on mountains in Scotland and has digitate serrated leaves, white and satiny beneath. A common British plant of very humble growth and unpretending appearance is the field lady's mantle, or parsley piert. (*A. arvensis*), found in pastures and meadows; an astringent and diuretic, said to be sometimes useful in cases of stone in the bladder, by producing a large secretion of lithic acid.

LADYSMITH, a town in Natal, 180 miles from Durban. It was named after the wife of Sir Henry Smith, once governor of Cape Colony. During the Zulu War it was a British military station. In 1899-1900 it was a center of military operations, a siege by the Boers being gallantly withstood by a British garrison under General White. See BOER WAR.

LADY'S SLIPPER (*Cypripedium*), a genus of the plants of the natural order *Orchideæ*, of which one species, *C. calceolus*, is a native of Great Britain, be-

ing found in a few places in the N. of England, and is reckoned one of the most beautiful of the British orchids. The genus is remarkable for the large inflated lip of the corolla. Several very beautiful species are natives of the colder parts of North America. Many tropical and subtropical species and also garden hybrids of these are engrossing subjects of interest to British, continental, and American connoisseurs in choice and rare orchids. *C. spectabilis* is a North American species; *C. barbatum*, a native of Java.

LAEKEN (lä'ken), a N. suburb of Brussels. In it is the crypt of the Belgian royal family in the new Gothic Church of the Virgin, and a royal palace (built in 1782), which, previous to its destruction by fire, Jan. 1, 1890, contained valuable works of art and historical documents. The palace has been rebuilt in the same style as the one destroyed. Pop. about 25,000.

LÆLAPS, a large fossil dinosaurian reptile found in the Cretaceous formation of the United States.

LAERTES (lā-ur'tēz), according to Homer, a King of Ithaca, and the supposed father of Ulysses, whose real progenitor was Sisyphus. Laertes, however, resigned his crown to Ulysses, and retired to a farm. After the absence of his son for 10 years at the siege of Troy, and 10 more expended in his return journey, Ulysses found his old and infirm father still employed in his fields and garden; and, having cautiously made himself known to the old king, they repaired together to the palace of the faithful Penelope, where they discovered themselves to the delighted queen. Laertes in his youth had been one of the Argonauts.

LÆSTRYGONES (les-trig'ō-nēz), a fabled nation mentioned in Homer. They were giants who fed on human flesh and gave themselves up to evil doing.

LÆVULOSE (lev'ū-lōs), in chemistry, $C_6H_{12}O_6$, lævo-glucose, or sucro-lævulose, a variety of sugar, isomeric with dextrose, occurring together with dextrose in honey and in the juices of sweet fruits. It is also produced, together with an equal weight of dextrose, by the action of dilute acids, diastase, or yeast, on cane-sugar; or it may be obtained pure by heating inuline with dilute acids.

LA FARGE, JOHN (lä färj), an American artist; born in New York City, March 31, 1835. He studied under Couture in Paris, and became a National Academician in 1869; and a member of the Society of American Artists in 1877. He executed remarkable paintings, altar pieces, and decorations of interiors—notably of Trinity Church, Boston; and designed stained-glass windows for churches and many other buildings, in the new American manner, which is a revival of the art of making colored glass (instead of painting glass), of which he was the originator in association with Louis Tiffany. He was the designer of the "battle window" in Memorial Hall, Harvard University. In 1869 he was made president of the Society of American Artists. He published a volume of "Lectures on Art," and "An Artist's Letters from Japan." He died Nov. 14, 1910.

LA FARINA, GIUSEPPE (lä fä-rē'nä), an Italian historian; born in Messina, July 20, 1815. A democratic leader, favoring Italian unity and independence. His principal work was "History of Italy Narrated to the Italian People" (10 vols. 1846). He died in Florence, Italy, Sept. 5, 1863.

LAFAYETTE, a city and county-seat of Tippecanoe co., Ind., on the Wabash river, and the Cleveland, Cincinnati, Chicago and St. Louis, the Lake Erie and Western, and other railroads; 64 miles N. W. of Indianapolis. It is the farming and manufacturing trade center for the surrounding country; has boot and shoe factories, car works, flour and woolen mills, marble works, etc.; and is the seat of Purdue University, and the State Agricultural College. The city contains a high school, public library, several National banks; has electric light and street railroad plants, and waterworks. In the public square is an artesian well of sulphur. Pop. (1910) 20,081; (1920) 22,486.

LAFAYETTE ESCADRILLE, a squadron of American aviators fighting with the French in the World War. It went back long before the period of the United States' entry into the war and was of gradual growth. By the fall of 1915 there were six Americans serving as full-fledged pilots in the French army, and in the summer of 1916 the list numbered fifteen or more, with twice as many again training for their pilots' licenses in the military aviation schools. The pioneer was William Thaw of Pittsburgh, who was the first American to hold a commission in the French Flying Corps. Lieutenant Thaw had enlisted in the Foreign Legion in August, 1914. Later Sergeants Norman Prince of Boston and Elliott Cowdin of New York

were the first to enter the French aviation service, coming directly from the United States. As soon as it was seen that American ambulance workers in France showed a disposition to join the combatant forces a special channel was created for the reception of applications and so the Escadrille began to assume dimension. The Americans were at first distributed, but the idea of forming an all-American unit soon began to take shape. Early in 1916 there were enough pilots already brevetted in conjunction with the élèves or pupils in the training schools to man the dozen airplanes in one escadrille. In February, 1916, a captain was assigned to command an American escadrille, and the Americans were placed under his orders. Before the escadrille became an established fact Cowdin brought down one German machine and won the first Médaille Militaire.

In July, 1917, there were about 100 Americans in the Army Aviation School at the camp of Avord, near Bourges, and these continued to be augmented. By that time General Pershing and his staff were in France, and one hundred hydroplanes had been landed to strengthen the sea patrol against submarines. The Lafayette Escadrille was under the general inspection of Lieut.-Col. Girod, and Capt. Gallet was "Chief of Pilotage." Americans living in France had taken much interest in the formation of the escadrille, conspicuous among them being W. K. Vanderbilt, who was awarded the French decoration of the Red Rosette in acknowledgment. In course of time, as the aerial forces of the United States got into shape, the American aviators in the French service were absorbed by them and the experience they had gained in warfare proved of great help to aviators in the United States service.

LAFAYETTE, MARIE JEAN PAUL ROCH YVES GILBERT MOTIER, MARQUIS DE, a famous French military officer and statesman; born in the castle of Chavagnac, Auvergne, France, Sept. 6, 1757. He belonged to an ancient family; came to his estates at 13; married three years later; entered the army, and sailed, in spite of the opposition of the court, for America in 1777, to offer his sword to the colonists in their struggle for independence. He became an intimate and admiring friend of Washington, who gave him the command of a division after his conduct at the battle of Brandywine. The treaty between the insurgents and France at once led to war between France and England, and Lafayette returned to his country early in 1779. Six months later he again crossed the Atlantic, was charged with the defense of Virginia, and had his share in the battle of Yorktown, which practically closed the war. On a third visit to North America in 1784, after the conclusion of peace, his tour was a continual triumph.

Lafayette had imbibed liberal principles in the freer air of America, and was eager for reforms in his native country. He was called to the Assembly of Notables in 1787, and sat in its successor, the Assembly of the States General, and

LAFAYETTE

in that which grew out of it, the famous National Assembly of 1789. He took a prominent part in its proceedings, and laid on its table, July 9, 1789, a Declaration of Independence. He was soon appointed to the chief command of the armed citizens, whereupon he formed the National Guard, and gave it the tri-color or cockade. He struggled incessantly for order and humanity, yet was mortified to the heart by the furious violence of the mob. The Jacobins hated his moderation, while the court abhorred his reforming zeal. Along with Bailly he founded the club of the Feuillants, and he supported the abolition of title as well as of all class privileges.

After the adoption of the constitution of 1790 he retired to his estate of Lagrange till he received the command of the army of Ardennes, with which he won the first victories at Philippeville, Maubeuge, and Florennes. But the

hatred of the Jacobins increased, and at length Lafayette, who had gone from the army to Paris publicly to denounce the Jacobin Club, finding on his return to the camp that he could not persuade his soldiers to march to Paris to save the constitution, rode over into the neutral territory of Liège. He was seized by the Austrians and imprisoned at Olmütz till Bonaparte obtained his liberation in 1797; but he took no part in public affairs during the ascendency of Bonaparte. He sat in the Chamber of Deputies from 1818 to 1824 as one of the extreme Left, and from 1825 to 1830 he was again a leader of the opposition. In 1830 he took an active part in the revolution, and commanded the National Guards. In 1824 he revisited the United States, by invitation of Congress, which voted him a grant of $200,000 and a township of land. He died in Paris, May 20, 1834. In 1898 the public school children in the United States contributed in small sums the funds for a statue of Lafayette, which was erected in Paris.

LAFAYETTE COLLEGE, an educational institution in Easton, Pa.; founded in 1826 under the auspices of the Presbyterian Church; reported at the close of 1919: Professors and instructors, 48; students, 695; volumes in the library, 60,000; productive funds, $961,988; income, $173,990; president, J. H. McCracken, Ph.D., LL.D.

LA FÈRE, a town in France, in the Aisne department, on an island in the Oise, near its confluence with the Serre, 14 miles N. W. of Laon. It is a fortress of the second class, and has a school of artillery. During the Allied offensives of 1917 La Fère formed a point in the Hindenburg line and was the scene of much fighting. Pop. about 5,000.

LAFITTE, JEAN (lä-fēt'), an American buccaneer; born in France, 1780. He is first authentically known as the chief of an organized and formidable body of desperadoes, having their headquarters on an island in Barataria Bay, in the Gulf of Mexico. Committing various piratical acts, the United States Government sent out an expedition against them in 1814, which captured their stronghold and all vessels lying there at the time, Lafitte and his companions escaping. At the commencement of the war with the United States in 1812, Lafitte was offered by the British Government $30,000, and a naval commission, to co-operate in their expedition against New Orleans. This offer he spurned, and communicating its nature to Governor Claiborne of Louisiana, he offered the services of himself and men against the enemy, on the sole condition of pardon for their past offenses. His offer was accepted, and Lafitte kept his word by rendering efficient aid to the Americans in the battle of Jan. 8, 1815. Lafitte later settled in Galveston, then removed to Yucatan, where he died in 1826.

LA FOLLETTE, ROBERT MARION, a United States Senator from Wisconsin; born in Primrose, Wis., in 1855. He graduated, University of Wisconsin, in 1879. The following year he was admitted to the bar. From 1880 to 1884

R. M. LA FOLLETTE

he was District Attorney for Dane co. From 1885 to 1891 he was a member of Congress and took a prominent part in framing the McKinley Bill. He was elected governor of Wisconsin in 1903 and 1905. In the latter year he was elected United States Senator, and was re-elected in 1910 and 1916. From his earliest entry in political life he was an advocate of liberal, and at times, radical policies, both in the State and National government. He was a candidate for the presidency in 1908 and in 1912. He refused the nomination of the Farmer-Labor Party in 1920.

LAFONTAINE, AUGUST HEINRICH JULIUS (lä-fôn*g*-tān'), a German novelist; born in Brunswick, Oct. 5, 1758. He wrote more than 150 novels,

and founded a school which in its day was regarded with high favor at the court of Prussia for its tone of illiberal moralizing sentimentality. Among his novels may be named: "Picture of the Human Heart" (1792); "Descriptions of the Life of Man" (1811); "The Parsonage on the Lake Side" (1816). He died in Halle, April 20, 1831.

LAFONTAINE, HENRI, a Belgian law authority. He was born in Brussels in 1854 and received his education mainly in his native city, entering the profession of law. In course of time he became professor of international law and senator and director of the International Bibliographical Institute, Brussels. In 1913 he won the Nobel Peace Prize. His works include: "Les droits et les obligations des entrepreneurs des travaux publics"; "Traité de la Contrefaçon"; "Pasicrasse Internationale"; "Bibliographie de la Paix et de L'Arbitrage."

LA FONTAINE, JEAN DE, one of the classics of French literature; born in Château-Thierry, Champagne, France, July 8, 1621. He was about 22 years old when his literary ambition was awakened by the odes of Malherbe. A niece of Cardinal Mazarin admired his verses, and carried him to Paris; and

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there, speedily welcomed into the best literary and aristocratic circles, he spent the last 35 years of his life. The first volume of his "Tales" appeared in 1664; a second was added in 1671. The 12 books of his "Fables" were published in equal parts in 1668 and 1678. It is through them that La Fontaine is universally known. He is an inimitable teller of small stories. His personal character, strange mixture of childish simplicity and finesse which is perceptible in his poems, made him at once the pet and the laughing-stock of his friends and patrons. During the last two years of his life the religious sentiments of his early youth revived. He was admitted to the French Academy in 1684, conjointly with his friend Boileau, and died in Paris, April 13, 1695.

LA FOURCHE (lä fōrsh), a bayou in Southeastern Louisiana, an outlet of the Mississippi, which begins at Donaldsonville, on the right bank and flows S. E. to the Gulf of Mexico, with a total length of 150 miles. It is navigable by steamboats 100 miles from its mouth.

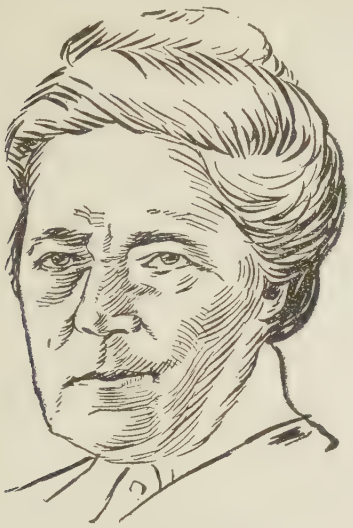
LAGAN (lā'gan), or **LIGAN** (lī'-), in maritime law, goods found at such a distance from shore that it is uncertain what coast they would be carried to, and therefore belonging to the finder.

LAGENARIA (laj-e-nā'ri-ä), in botany, a genus of *Cucurbitaceæ*, containing but one species, the bottle, club, or trumpet gourd (*L. vulgaris*). It is wild in India, the Moluccas and Abyssinia. In that state it is poisonous, but when cultivated its deleterious properties disappear. Anglo-Indians boil the fruit when young and use it as vegetable marrow. Natives of India slice and eat it as a curry. The young shoots and leaves are also eaten. The seeds yield an oil which is used as an application in headaches. The flesh of the fruit is deemed to be diuretic, refrigerant and anti-bilious. It is cultivated in the warmer parts of the Eastern Hemisphere.

LAGENORHYNCHUS (la-je-nō-ring' kus), a genus of *Delphinidæ*. The beak of the upper jaw keeled on each side, the lower jaw with two or three small, conical, rudimentary teeth in the middle of each side. *L. leucopleurus*, the *Delphinus tursio* of Knox, occurs in Orkney and the Northern Ocean generally. *L. albirostris* is the white-beaked bottlenose. It has been taken on the coast of Norfolk, England.

LAGERLÖF (OTTILIA LOVISA) SELMA, a Swedish novelist, born in 1858. Her first novel, "Gosta Berling's Saga," published in 1891, created a profound sensation in Sweden and its reputation quickly spread throughout Europe and to America. It was followed by other novels, bearing the mark of great talent. A year of travel in Egypt, Palestine, and Greece was followed by the publication of two volumes, entitled "Jerusalem," 1901–1902. Other notable novels she produced are "Miracles of

Anti-Christ," (1897); "From a Swedish Homestead" (1899); "Invisible Links" (1894); "Matilda Wrede" (1914). She received the degree of doctor from Upsala



SELMA LAGERLÖF

University in 1907, and in 1909 was awarded the Nobel Prize for the best work in literature. She was elected to the Swedish Academy in 1914 and was the first woman to receive this honor.

LAGERSTROMIA (lag-ur-stru'mi-ā) (named after Magnus Lagerström, of Gothenburg), the typical genus of the tribe *Lagerstromieæ*. It consists of 14 East Indian and Chinese trees and shrubs, with splendid flowers. *L. indica*, a shrub common in Indian gardens, has crumpled petals. It is from China. The flowers of *L. flos reginæ*, or *L. reginæ*, are in panicles, at first of a pale-rose color, but afterward deepening into a fine purple. It is a large, deciduous tree, growing in eastern Bengal and Burma. Its bark and leaves are considered to be purgative and hydragogue, and the seeds to be narcotic. The timber is regarded in the E. of India and Burma as the most valuable of any except teak. It is used in the East for ship and boat building, making carts, gun carriages, etc. *L. lanceolata*, *L. microcarpa*, and *L. parviflora*, growing in India, *L. tomentosa* in Burma and Pegu, and *L. hypoleuca* in the Andaman Islands, have also valuable wood. *L. flos reginæ*, *L. parviflora*, and *L. tomentosa* yield gum resins. The bark of *L. parviflora* is used in India for tanning, and along with the bark of *Terminalia tomentosa* for dyeing skins black.

LAGNY, a town in France, in the department Seine-et-Marne, 12 miles S. W. of Meaux, on the left bank of the Marne. It figured in the battle of the Marne in September, 1914, and for a time was threatened by the Germans, but the French victory in that battle saved it. Pop. about 5,000.

LAGO MAGGIORE (lā'gō mäd-jō'-re), (ancient Verbanus), a lake partly in northern Italy, partly in Switzerland, surrounded by hills, and containing several islands; about 39 miles long and 7 broad, and in some places 1,500 feet deep.

LAGOMYS, a genus of rodents, much resembling hares or rabbits, but with limbs of more equal length, more perfect clavicles, longer claws, longer head, shorter ears, and no tail. There are about a dozen species, one in S. E. Europe, one on the Rocky Mountains, and the rest on the mountains of northern Asia. They are about the size of guinea pigs, and make burrows, but are particularly interesting for their habit of stacking choice herbage for winter use. The stacks of the Siberian species, the Alpine lagomys, or pika (*L. alpinus*), are said to be utilized by the sable-hunters for fodder.

LAGOON (lā-gön'), a shallow lake or sheet of water, connected with the sea or a river, found on the coasts of Holland, Italy, South America, etc. Also a sheet of water surrounded by an ATOLL (*q. v.*).

LAGOPUS (-ō'pus), ptarmigan, a genus of *Tetraonidæ* (grouse). The bill has the base thickly feathered, the eyebrows are naked and smooth, the tarsus and toes thickly covered with feathers in winter. *L. scoticus* is the red grouse. *L. mutus*, or *vulgaris*, is the ptarmigan. *L. albus* is the willow grouse of the Swedish Peninsula, Russia, and Siberia.

LAGOS (lä'gös), a seaport on the S. coast of Portugal, 30 miles E. N. E. from the extremity of Cape St. Vincent; pop. about 8,000; principal industry tunny and sardine fisheries. In the bay of Lagos Admiral Boscawen defeated the French Toulon fleet, Aug. 18, 1759.

LAGOS (lā'gos) a town on the W. coast of Africa, since 1914 the temporary capital of Nigeria. Pop. about 60,000.

LAGOS, a region in West Africa under the protection of Great Britain, and since 1914 a province of southern Nigeria; area, over 29,000 square miles; pop. about 2,250,000.

LAGOSTOMUS, or **LAGOSTOMYS** (-gos'-), a genus of rodent mammalia, in which the forefeet are furnished with four toes, the hinder with three only, as in the cavies, all of them armed with stout claws adapted for digging. The ears are of moderate size, and the tail comparatively short. Their three anterior molars of the upper jaw consist each of two double layers, and the last of three. The only known species, *L. trichodactylus*, is about the size of a hare, and inhabits Chile and Brazil; its general color is grayish; the fur of two sorts, one entirely white, and the other, which is coarser, black, except at the base; the under parts white. Its motions are quick and resemble those of a rabbit; and it seeks its food by night, subsisting wholly on vegetables; it inhabits the level country, and is not esteemed as food. It has very generally obtained the name of viscacha.

LAGOTHRIX (lag'-), a genus of South American monkeys, characterized by their round head, a thumb on the anterior hand, and the tail partly naked. The Grison, or silver-haired monkey is a species of this genus.

LA GRANGE, a city of Georgia, in Troup co. It is on the Atlanta and West Point, the Atlanta, Birmingham, and Atlantic, and the Macon and Birmingham railroads. Its industries include cotton and cotton-seed oil mills, and a creamery. It is the seat of two women's colleges. Pop. (1910) 5,587; (1920) 7,038.

LAGRANGE, JOSEPH LOUIS (lä-gr*o*ngzh'), a French mathematician; born in Turin, Jan. 25, 1736. While still a youth he solved for Euler the "isoperimetrical problem"; when Euler died, he succeeded him as director of the Berlin Academy (1766), and held that office till 1787. After the death of Frederick the Great he removed to Paris; there he was lodged in the Louvre, and a pension was settled on him equal to that granted by Frederick. He remained in France during the Revolution, safeguarded by the respect felt for his learning. His greatest work is "Analytical Mechanics." He died in Paris, April 10, 1813.

LA GRITA, a town in Venezuela, beautifully located in a valley 6,000 feet above the sea level. The country about it is fertile, the principal crops being wheat, sugar cane, and tobacco. It is in a zone troubled by frequent earthquakes. Pop. about 26,000.

LA GUAIRA (lä gwī'ra), a city in Venezuela, on the Caribbean Sea. It was founded in 1588 and is now the most important place in the republic, commercially. A British-German fleet blockaded the town in 1912, to enforce claims on the government. Pop. about 18,000.

LAGUNA (lä-gö'nä), a tribe of North American Indians numbering about a thousand, and living in a collection of small pueblos, or villages, in New Mexico on the Rio San José.

LAGURUS (-gūr'-), hare's-tail grass, a genus of *Graminaceæ*, tribe *Aveneæ*. *L. ovatus* is a soft, hairy, annual, tufted grass, with short, flat leaves, a short ligule and long awns. Found in Guernsey and naturalized near Saffron Walden. It is more common in southern Europe and in parts of Asia.

LA HAGUE (lä häg), the N. W. extremity of the peninsula of Cotentin, in the N. of France, over against Alderney of the Channel Islands. It is crowned by a lighthouse, 158 feet high. This must not be confounded with La Hogue (*q. v.*).

LA HARPE, JEAN FRANÇOIS DE (lä ärp), a French writer; born in Paris, France, Nov. 20, 1739. He first attracted attention in 1763 by a successful tragedy, "Warwick." His fame was further enhanced by a series of eloquent "Eulogies," and the plays "Mélanie," "Philoctetes," and "Coriolanus." His best known works are, however, his critical lectures, published in 12 vols. (1799–1805) as "Lycæum, or Course in Literature." His "Literary Correspondence," published in 1801, caused fierce controversies. The Revolution at first aroused his enthusiasm; but after five months' imprisonment for refusing to countenance the methods of the extremsts he became a firm supporter of Church and crown. A posthumous work, "Cazotte's Vision," must be ranked among the best achievements of his pen. He died in Paris, Feb. 11, 1803.

LAHN, a river of central Germany, which, after a W. course of 100 miles, empties into the Rhine near Lower Lahnstein.

LA HOGUE (lä hōg), a roadstead on the E. side of the peninsula of Cotentin, in the N. of France; not to be confounded with Cape La Hague. On May 19, 1692, the French fleet of 44 sail under Tourville, which Louis XIV. had collected for the purpose of invading England in support of James II., was defeated here by the combined English and Dutch fleets of 90 vessels under the Jacobite Admiral Russell. Twelve large

French line-of-battle ships which took refuge in the shallow roadstead of La Hogue were destroyed, under the eyes of King James, by boats' crews led by Admiral Rooke.

LAHORE (lä-hōr'), a city of Hindustan, India; capital of the Punjab, and administrative headquarters of Lahore division and district, on the left bank of the Ravi, 265 miles N. W. of Delhi; it is surrounded by a brick wall 16 feet high, flanked by bastions; area, 640 acres. The most remarkable buildings are the mosques of Aurengzebe, of Vizier Khan, and of Sonara; the mausoleum of Runjeet Singh, etc. In 1524 Lahore became the seat of the Mogul empire, under which it reached its greatest splendor. Before passing into the hands of th. British it was the capital of the Sikhs. Pop. about 230,000. Also Lahore division; area, 8,987 square miles; pop. 2,250,000. Also Lahore district, the central district of Lahore division; area, 3,648 square miles; pop. 1,250,000.

LAIBACH, a city of Jugo-Slavia, located about 45 miles from Trieste. Among its most notable monuments is one to Marshal Radetsky, and the Cathedral of St. Nicholas. Laibach is an important historical city because of the meeting of the sovereigns of Europe there in 1821 and their decision to repress rebellion in Italy. Pop. about 50,000.

LAIDLAW, WILLIAM, the friend and amanuensis of Sir Walter Scott; born in Blackhouse, Selkirkshire, Scotland, in November, 1780. After farming with but little success at Traquair and Libberton, he settled in 1817 as a kind of factor and manager on the estate of Abbotsford. His acquaintance with Scott began in the autumn of 1802, and he supplied some of the materials for the third volume of the "Minstrelsy of the Scottish Border." His own ballad, "Lucy's Flittin," would alone have kept the name of "Willie" Laidlaw from being forgotten. He died May 18, 1845.

LAKE, a large sheet or expanse of water entirely surrounded by land, and having no direct or immediate communication with any sea, ocean, or river, or having communication only by means of rivers. The largest fresh-water lake on the globe is Lake Superior, in North America. It is 400 miles long, 160 miles wide at its greatest breadth, and has an area of 32,000 square miles.

LAKE ALBERT, or **ALBERT NYANZA**, a large lake in British East Africa, the most northerly of five that are situated in a great valley that extends for a thousand miles to Zambezi river. Its length is about 100 miles and it is surrounded on every side by towering mountains, some of whose peaks are 7,000 feet above sea-level. Discovered in 1864 and named after Prince Albert, the husband of Queen Victoria.

LAKE CHARLES, a city of Louisiana, the parish-seat of Calcasieu parish. It is on the Calcasieu river, and on the Kansas City Southern, the Louisiana Western, the Lake Charles and Northern, the Louisiana and Pacific, and the St. Louis, Iron Mountain and Southern railroads. It is on Lake Charles. Its public buildings include a Federal building, a public library, city hall, sanitarium, and hotels. Its industries include the manufacture of lumber, ice, machine shop products, etc. It is the center of an important lumber and petroleum and sulphur producing region. Pop. (1910) 11,449; (1920) 13,088.

LAKE DWELLINGS, in anthropology the *Pfahlbauten* of German, the *habitations lacustrines* of French writers. The earliest account of similar dwellings is to be found in Herodotus, who describes a Thracian tribe living, in 520 B. C., in a small mountain lake of what is now Rumelia. The custom of constructing these habitations has come down to the present day. The fishermen of Lake Prasias, near Salonica, still inhabit wooden cottages built over the water, as the Thracian tribes did, and in the East Indies the practice of building lake settlements is very common.

The lake dwellings proper of Switzerland came to light during the winter months of 1853–1854, when the water of the lakes fell much below its ordinary level. Dr. Keller, who first described these lake dwellings, says that the main platform was made of round timbers, rarely of split boards, covered with a bed of mud; the walls and sides were in great measure of interlaced branches, the interstices filled with moss and daubed with clay.

Also artificial islands found principally in Ireland, where they served the purpose of strongholds. In this case "the support consisted not of piles only, but of a solid mass of mud, stones, etc., with layers of horizontal and perpendicular stakes, the latter serving less as a support than to bind the mass firmly together."

LAKE EDWARD or **EDWARD NYANZA**, a lake of Central Africa, on the boundary line between Uganda and the Belgian Congo. The

lake is nearly 60 miles long and about half that distance in width. Together with the smaller lakes in the valley it forms one of the sources of the Nile. Discovered in 1876 by Stanley, who named it after Prince Edward, who later became Edward VII.

LAKE FOREST UNIVERSITY, a co-educational institution in Lake Forest, Ill., founded in 1857 under the auspices of the Presbyterian Church; reported at the close of 1919: Professors and instructors, 18, students, 167; president, H. W. Wright.

LAKE MOHONK. See MOHONK LAKE.

LAKE OF GENNESARET. See GALILEE, SEA OF.

LAKE OF LOT, THE, the Arabic name for the Dead Sea.

LAKE OF THE FOUR FOREST CANTONS, another name for the Lake of Lucerne. The city of Lucerne, and the towns of Küsnacht, Brunnen, and Flüelen are on its shores.

LAKE OF THE THOUSAND ISLANDS, an expansion of the ST. LAWRENCE (*q. v.*) extending about 40 miles below Lake Ontario. It contains about 1,500 rocky islets, the largest, Wolfe Island (48 square miles; pop. 2,383), measuring 21 miles by 7.

LAKE OF THE WOODS, a large lake of North America, studded with numerous wooded islands; lat. 49° N., lon. 95° W.; length nearly 100 miles, circuit about 300 miles. It is mostly in Ontario, but extends also into Manitoba and Minnesota. It is fed by the Rainy river, and drained by the Winnipeg.

LAKES (originally prepared from lac, whence the name), pigments or colors formed by precipitating animal or vegetable coloring matters from their solutions chiefly with alumina or oxide of tin. Cochineal and madder lakes are the only ones used by artists. The former are prepared with COCHINEAL (*q. v.*) and alumina, and according to their shade of red, or purple red, are known as carmine, crimson lake, scarlet lake, purple lake and Florentine lake. These were formerly much employed by water color painters, but they have not much stability. The madder pigments of this kind, called rose madder or madder lake and madder carmine, are quite permanent. There are several yellow lakes made, but they are unstable. Paper-stainers and decorators use several pink lakes.

LAKE SCHOOL, a name applied in derision by the "Edinburgh Review" to a class of poets who, following the example of Wordsworth, Southey, and Coleridge, the founders of the school (who resided for a considerable part of their lives near the lakes of Cumberland and Westmoreland), substituted a simple and natural taste for the stiff classicism of the 18th century.

LAKE, SIR PERCY HENRY NOEL, a British soldier. He was born in 1855 and was gazetted in the 59th Foot in 1873. He acted as assistant field engineer in 1878–1879 in the Afghan War, and passed the Staff College with honors

SIR PERCY LAKE

in 1884. In 1885 he won the medal with clasp and bronze star in the Soudan Expedition. In 1891–1892 he was secretary to Lord Wantage's Committee on "Terms of Service in the Army," and was later successively Assistant Quartermaster General and Chief Staff Officer, 2nd Army Corps. He was Chief of General Staff and then Inspector-General, Canadian Militia, 1905–1910, Division Commander, India, 1911-1912, and Chief of General Staff, India, 1912–1915. He commanded in Mesopotamia in 1916 during World War.

LAKE, SIMON, an American naval architect and inventor; born in Pleasantville, N. J., in 1866. He was educated at the Clinton Liberal Institute and the Franklin Institute in Philadelphia. Early in life he turned his attention to

the subject of submarines, and in 1894 built the first experimental boat. Three years later he completed the "Argonaut," which was the first submarine to operate successfully in the open sea. Following this he designed and built many submarine torpedo boats for the United States and foreign countries. He was the inventor of much apparatus in connection with submarines and was a member of many scientific and engineering societies.

LAKEWOOD, a city of Ohio, in Cuyahoga co. It is a residential suburb of Cleveland and has a public library and a hospital. Pop. (1910) 15,181; (1920) 41,732.

LAKE WORSHIP, a particular kind of water worship noticed by Sir John Lubbock (Lord Avebury) ("Prehistoric Times," p. 269) to refute a theory that the gold ornaments dredged up from the sites of lake dwellings were offerings to the gods. That certain lakes were held sacred by ancient nations is indisputable.

LALANDE, JOSEPH JÉRÔME LEFRANÇAIS DE (lä-lo*ngd*'), a French astronomer; born in Bourg, Ain, France, July 11, 1732. Sent to Paris to qualify for an advocate, but turned to the study of astronomy. The Paris Academy sent him to Berlin in 1751 to determine the moon's parallax. He was appointed an astronomer-royal and later professor of astronomy in the College of France, and in 1795 Director of the Paris Observatory. His principal work is "Treatise on Astronomy" (2 vols., 1764). In 1802 he instituted the Lalande prize for the most notable astronomical book or observation of the year. He died in Paris, France, April 4, 1807.

LALIN, a Spanish town about 26 miles N. of Pontevedra. Some interesting old buildings are located in the city, including an old Roman temple and the ruins of the monastery of Carboiro. Pop. about 17,500.

LA LINEA, a Spanish city near the English fortress of Gibraltar. Inhabited by laborers who make their living working for the garrison at Gibraltar and selling foodstuffs to them and to the naval vessels stationed there. Pop. about 35,000.

LALITA-VISTARA (lal'i-ta-vis'tarä), the name of one of the most celebrated works of Buddhistic literature. It belongs to the N. Buddhists, existing only in a debased Sanskrit version. It contains a narrative of the life and doctrine of the Buddha Sakya-muni, treating of "Dharma," or religious law.

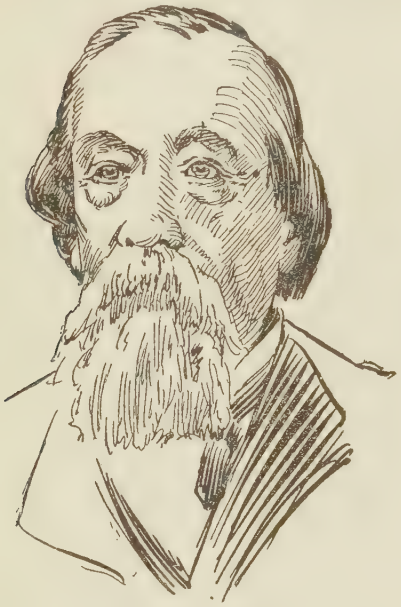
LAMAISM (lä'ma-izm), a system partly religious, partly political—the Church and State Establishment of Tibet—standing in the same relation to Buddhism proper as the Western State churches stand to primitive Christianity. Buddhism was introduced into Tibet in A. D. 622 by Srong Tsan Kampo, who founded the present capital, now known as Lhasa. From the death of this king down to about 850 is called the "First Introduction of Religion." More than a century of civil war followed, and in 971 there took place the "Second Introduction of Religion" into Tibet. For more 300 years Buddhism grew in power and wealth, and Kublai Khan embraced the doctrine of the Lamas. In 1390, Tsongkapa, the Tibetan monastic reformer, appeared in Lhasa, and at his death, in 1419, he left three immense monasteries with 30,000 monks. The two things on which he insisted were (1) the observance of celibacy, and (2) simplicity in dress. About the middle of the 15th century, the Emperor of China acknowledged the leaders—the Dalai Lama and the Pantshen Lama—as titular overlords of the Church and tributary rulers of Tibet. They were abbots of the monasteries at Gedun Dubpa near Lhasa, and Krashis Lunpo in Further Tibet, and their successors still exercise the same rights. Both are looked upon as incarnations—living in heaven, and appearing on earth in an apparitional body. The political authority of the Dalai Lama is confined to Tibet, but he is head of the Buddhist Church throughout Mongolia and China.

LA MANCHA. See MANCHA, LA.

LAMAR, LUCIUS QUINTUS CINCINNATUS, an American jurist; born in Putnam co., Ga., Sept. 1, 1825. Admitted to the bar in 1847, he served two terms as congressman from Mississippi (1856–1860). In 1861, after taking part in the secession convention of Mississippi, he entered the Confederate army and achieved distinction. After the war he was Professor of Political Economy and Law Professor in the University of Mississippi, and afterward served in both Houses of Congress, where he showed strong friendship for the North. In 1885 Secretary of the Interior, and in 1887 became an Associate Justice of the United States Supreme Court. Died in Macon, Ga., Jan. 24, 1893.

LAMAR, MIRABEAU, 2d president of the republic of Texas; born in Louisville, Ga., Aug. 16, 1798. He founded a newspaper, devoted to State rights, called the "Columbus Inquirer," and, in 1835,

removed to Texas, then on the verge of revolution, in which he later took an active part. He distinguished himself at the battle of San Jacinto. He afterward became, successively, attorney-general and secretary of war to the new republic. In 1836 he was elected vice-president, and in 1838–1841 president. On the outbreak of the Mexican War, as



LUCIUS Q. C. LAMAR

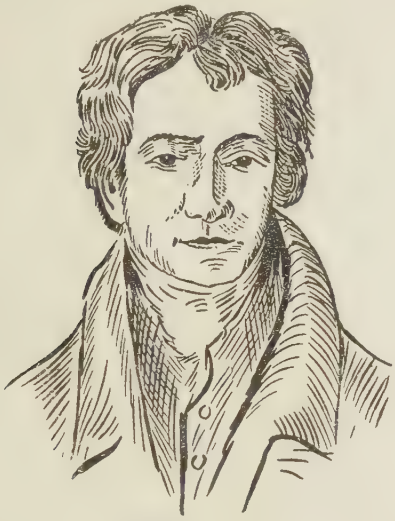
Major-General, he served at the battle of Monterey under General Scott. He was afterward employed in operations against the Comanche Indians, and United States minister to Nicaragua and Costa Rica. He died in Richmond, Tex., Dec. 19, 1859.

LAMARCK (lä-märk'), **JEAN BAPTISTE PIERRE ANTOINE DE MONET, CHEVALIER DE**, a French naturalist; born in Bazantin, France, Aug. 1, 1744. A soldier in his youth, an accident compelled him to relinquish the army. Like many other naturalists, his first study was botany. His first work, the "French Flora," met with great success. Other botanical works soon followed. In 1793 he was appointed to a chair of natural history at the Garden of Plants, and turned to the study of zoölogy. His great and excellent work, the "History of Invertebrate Animals," entitles him to the first rank of zoölogists. As a conchologist his name stands pre-eminent, and the Lamarckian arrangement of shells is still that of the present day. In his latter days he became blind. He died in Paris, Dec. 18, 1829.

LAMARTINE (lä-mär-tēn'), **ALPHONSE MARIE LOUIS PRAT DE**, a French poet and statesman; born in Mâcon, France, Oct. 21, 1790. Educated at the Jesuit School at Belley he spent some years in traveling, devoting himself chiefly to poetry. "Poetical Musings" (1820), gave him a high place among the poets of the day. In 1820 he married a rich English lady, Eliza Marianna Birch. "New Poetical Musings" (1823), and "Poetical Religious Harmonies" (1828) established his poetic fame, and he was elected member of the French Academy (1830). After the revolution of July he traveled in the East, and on his return published "Journey in the East" (1835). During his absence he had been elected a member of the Chamber of Deputies, and thenceforward was active in politics. In 1847 he published his "History of the Girondins." After the February revolution of 1848 he became minister of foreign affairs in the provisional government. After the insurrection of June, 1848, he lost his popularity, and in 1851 withdrew from public life. He was latterly much impoverished, and was voted an annuity in 1867. Among his later works are: "History of the Restoration," "History of Turkey," "History of Russia," "Shakespeare and His Work," "Life of the Tasso," etc. His "Memoirs" appeared in 1871. He died in Paris, March 1, 1869.

LAMB, CHARLES, an English author; born in London, England, Feb. 10, 1775. He was educated at Christ's Hospital. He obtained an appointment in the South-Sea House, in 1789, which he quitted in 1792, for the East India Company, from which he retired in 1825, on a pension of $2,250 per annum. A confirmed bachelor, he resided for the great part of his life with an accomplished sister. Their pleasant house at Islington was the first resort of a most brilliant literary coterie which included Coleridge, Lloyd, Southey, Wordsworth, Dyer, Barton, Leigh Hunt, Procter, and Hood, Godwin, Hazlitt, Talfourd, De Quincy and Manning the theologian. Of his works the most eminent is the "Essays of Elia" (1823). This work was supplemented by the "Last Essays of Elia," in 1833. Lamb was also the author of innumerable essays, poems, etc., contributed to the magazine literature of his day. He died in Edmonton, England, Dec. 27, 1834.

LAMBALLE (lo*ng*-bäl′), **MARIE THÉRÈSE LOUISE OF SAVOY-CARIGNAN, PRINCESSE DE**, a French princess; a daughter of the Prince of Carignan; born in Turin, Sept. 8, 1749. She was made by Marie Antoinette superintendent of the royal household, and her friend and companion. Princess Lamballe proved her devotion by returning to France (whence



CHARLES LAMB

she had escaped to England) after the unsuccessful flight from Versailles, by sharing the queen's imprisonment for a week in the Temple, and finally by refusing to take the oath expressing detestation of the king, queen, and monarchy (Sept. 3, 1792). As she stepped out of the court room on that fatal day she was cut down, and her head on a pike was paraded before the queen's windows.

LAMBAYEQUE, a seacoast province of Peru. Situated in the N. W. part of that country it is traversed by many mountain ranges. The soil is poor, but crops of sugar, tobacco and cotton are raised. The capital of the province is Chiclayo. Pop. about 130,000.

LAMBERT, JOHN, an English Parliamentary general during the English Civil War; born in Kirby Malhamdale, Yorkshire, Sept. 7, 1619. He entered the Parliamentary army under Fairfax, was colonel at Marston Moor, and Major-General in the war in Scotland. He took the lead in the council of officers who gave the protectorate to Cromwell, but he afterward fell into disgrace, and was deprived by Cromwell of all his commissions, though a pension of $10,000 was allowed. He headed the confederacy which deposed Richard Cromwell, and in 1660 set out for the N. to encounter Monk, but was deserted by his troops, seized, and committed to the Tower. At the Restoration he was tried and condemned to death, but had his sentence commuted to banishment to Guernsey, where he died in 1683.

LAMBERT PINE, *Pinus lambertiana*, a gigantic tree, discovered by Douglas in New Albion. Trunk, lofty and erect; leaves fine, rather stiff, bright green, with no sheaths; cones very large and pendulous; seeds large and used for food.

LAMBESE (lo*ng*-bāz′), or **LAMBESSA** (lam-bes′sä), a town of Algeria, department of and 62 miles S. W. of the town of Constantine. It is the site of the ancient Lambæsa, and has important Roman remains.

LAMBETH, one of the English metropolitan parliamentary boroughs, S. of the Thames, in the county of Surrey, and forming part of the S. W. quarter of London. Lambeth Palace has been the official residence of the archbishops of Canterbury since 1197. It contains a splendid series of portraits of the archbishops, and a valuable library. The Lollards' Tower dates from 1434. The Lambeth Articles, drawn up in 1595 by Archbishop Whitgift and others, were nine in number, and pronouncedly Calvinistic in doctrine. They were disapproved by Queen Elizabeth, and were never in force.

LAMBOYS, in old armor, skirts of steel plates, flexible and overlapping, attached to the front and back pieces of the cuirass, and hanging over the thighs.

LAMECH, a descendant of Cain, in the 5th generation, and ancestor of a numerous posterity distinguished for skill in agriculture, music, and several mechanical arts. He is the first polygamist on record. Another Lamech, son of Methuselah, and father of Noah, lived 777 years, and died only five years before the flood (Gen. v. 25–31).

LAMELLIBRANCHIATA (-brang-ki-ā′tä), a division of the higher mollusca, represented by the oysters, mussels, cockles, etc.

LAMELLICORNIA (-kor′ni-ä), or **LAMELLICORNES** (-kor′nēz), a tribe of beetles having short antennæ terminated by a lamellated club—*i. e.*, a club composed of lamellæ or little plates—formed by the expansion on one side of

the three apical joints. The mentum is solid and horny; the legs are long, and have spines and tooth-like projections on the fore ones, enabling them to dig with facility. There are six small legs attached to the thoracic segments. Some live in the ground, feeding on the roots of plants. They are all herbivorous. Among them are some of the most splendid beetles existing. More than 7,000 species are known. They are divided into two families: *Scarabeidæ* and *Lucanidæ*.

LAMELLIROSTRES (-ros'trēz), a family of swimming birds. The family comprises the ducks, geese, swans, flamingoes, etc.

LAMENNAIS, HUGUES FÉLICITÉ ROBERT DE (lä-muh-nā'), a French writer; born in St. Malo, June 19, 1782. He was ordained priest in 1817. The same year appeared the first volume of his "Essay upon Indifference in the Matter of Religion" (1807–1820). He developed his views further in "Religion Considered in its Relation to the Civil and Political Order" (1825) and "Progress of the Revolution and of the War against the Church" (1829). By degrees he became the critic of Church policy, and his journal "L'Avenir" (The Future) was condemned by the Pope. Lamennais bowed to Rome's decree; but after a year was published his "Words of a Believer" (1834), in which he repudiates all authority of popes and bishops. It was followed by "The Book of the People" (1837), and "The Past and the Future of the People" (1842), in the same tone. He wrote also: "Sketch of a Philosophy" (3 vols. 1841); "Religion"; and translated the Gospels, accompanying the text with notes. He died in Paris, Feb. 27, 1854.

LAMENTATIONS, one of the shorter books of the Old Testament. No author's name is attached to it in the Hebrew Bible, where it is simply designated from its first two words, *ekhah* = "O how." The Septuagint translators called it *Threnoi Ieremiou* = "Dirges or Lamentations of Jeremiah." Universal tradition attributes it to him, and the style is that of his acknowledged prophecies. The theme is the destruction and desolation of Jerusalem, and the slaughter of many of its inhabitants, with the misery of the survivors. It is chanted in part of the Jewish ritual on the 9th of Ab, in our month of July.

LAMIA, a city in Greece, located near the head of the gulf of Lamia and not far distant from the famous pass of Thermopylæ. The modern town contains some picturesque mosques and gardens. The most important industry is the raising of camels. Pop. approximately, 9,000.

LAMINARIA (-nā'), a genus of algals, the typical one of the family *Laminaridæ*, or the order *Lamina riaceæ*. In place of leaves there is a plane ribless expansion. The stem is either naked or fringed. The young stalks of *L. digitata and L. saccharina*, called tangles, are eaten. The first of these with *L. bulbosa* are most valued of the genus for kelp manufacture. *L. saccharina* is used as an imperfect hygrometer. It is administered in India in goiter, scrofula, and syphilis. So are *L. bracteata* and the large Australian species, *L. potatorum*.

LAMINATED PIPE, water, sewer, or gas pipe made of thicknesses of veneer or scale board successively wrapped to obtain thickness and strength. Each layer is thoroughly saturated with asphalt, and the grain of alternate layers passes in transverse directions, so as to secure an intimate bond and a line of resistance to disruption in any direction, lengthwise, oblique, or across the pipe circumference. The veneer is sometimes made to alternate with fabric or an adhesive composition.

LAMINATING MACHINE, a goldbeater's rolling-mill for reducing the ingot of gold to such a thickness that a square inch will weigh 6½ grains. The ingot weighs two ounces, and is three-quarters of an inch broad. The rollers are of hard steel, and extend the ingot to a ribbon. The gold is frequently annealed during the process.

LAMINATION, the arrangement of rocks in thin layers or laminæ, the condition of a large proportion of the earth's strata. Shale deposits exhibit this structure very plainly, being frequently easily separable into the thin laminæ in which they were originally deposited. The laminæ indicate interruption in the supply of the materials, which may have been occasioned by successive tides, by frequent or periodical floods, or by the carrying medium having access to a supply of different material, passing, *e. g.*, from mud to sand, and back again to mud.

LAMMAS, a name given to the first day of August, though the origin of the term is involved in obscurity. It is the day of the feast of St. Peter ad Vincula, or St. Peter in Bonds, which was instituted in 317, and, according to some authorities, received its title from the Di-

vine commission to Peter, "Feed my lambs." Others state that it is a corruption of the Saxon *Loaf-mass*, because an annual feast was then celebrated to return thanks for the first-fruits of corn.

LÄMMERGEIER (lem-mer-gī'er) (*Gypaetos barbatus*), a large bird of prey, also called the bearded vulture or bearded griffin. The full-grown bird is of a shining brownish-black color on the upper parts, with a white stripe along the shaft of each feather; the head is whitish, with black stripes at the eyes; the neck and underpart of the body are rusty yellow. It is the largest bird of prey in the Old World, measuring almost 4 feet high when sitting, nearly 5 feet in length, and from 9 to 10 feet in expanse of wing. Though by no means brave, it is bold and rapacious, swooping down on hares, lambs, young goats, chamois, etc. Once common in the Alps, it is now very rare, but occurs not infrequently in Sardinia, the Pyrenees, North African mountains, and the Himalayas.

LAMMERMOOR, or LAMMERMUIR (-mūr') **HILLS**, a range of Scotch hills stretching in a generally E. direction from S. E. Midlothian to the German Ocean at St. Abb's Head, and forming part of the boundary between Berwick and Haddington shires. Highest summit Lammer Law, 1,733 feet.

LAMONT, DANIEL SCOTT, an American executive officer; born in Cortlandville, N. Y., Feb. 9, 1851; was educated at Union College and engaged in journalism; private secretary to President Cleveland in 1885–1889 and Secretary of War 1893–1897, then vice-president of Northern Pacific R. R. Co., died 1905.

LAMONT, THOMAS WILLIAM, an American banker and philanthropist, born at Claverack, N. Y., in 1870. He graduated from Harvard University in 1892. After some time spent in newspaper work he became secretary and treasurer of the Bankers Trust Co., New York. In 1911 he was made a member of the firm of J. P. Morgan & Co., and was a director in many important financial institutions. During the World War he rendered efficient service both in the United States and in France as an official of the Red Cross. He also acted as financial adviser in Paris during the session of the Peace Conference.

LA MOTTE-FOUQUÉ (-fō-kā'), **FRIEDRICH, BARON DE**, a German author; born in Brandenburg, Feb. 12, 1777. Entering the army, he served in the campaign of the Rhine, and fought the French for the liberty of Germany in the beginning of the 19th century. His first works appeared under the name of "Pellegrin"; which contributed to fan the flame of patriotic ardor which led his countrymen to final victory. Leaving the army in 1831, he removed to Halle, where he delivered lectures on poetry and history. "Undine" gained him a world-wide reputation. Among his other works are "Sintram," a fairy tale; "Aslauga's Knight"; and the poems, "Sigurd," "Corona," "Bertrand du Guesclin," etc. He died in Berlin, Jan. 23, 1843.

LAMP, a vessel used for the combustion of liquid inflammable bodies, for the purpose of producing artificial light. The invention of the lamp is ascribed to the Egyptians. In treating of the construction of modern lamps, it is necessary to take into consideration the nature of the flame. In order to insure a constant and steady flame, it is necessary that the supply of combustible mattter be steady and uniform. It must, therefore, be either in a liquid or gaseous state, so that it may approach the flame in an uninterrupted current. The combustible substance may either be made to approach the flame by capillary attraction through wicks, or by mechanical pressure. The invention and introduction of the ARGAND LAMP (*q. v.*) (1789) made a revolution in illumination.

The introduction of mineral oils as illuminants caused a great variation in the construction of lamps, and a host of patents have been taken out for paraffin or kerosene lamps, some of which equal gas in illuminating power. The central draft-lamp using a round tubular wick that is raised or lowered by a rod operating a spurred wheel is one of the most popular. Lamps are now extensively used for heating and cooking, a double or triple flat wick being employed. In the United States and Europe vapor lamps are employed. In these, which consume the volatile hydrocarbon obtained from the products of the distillation of bituminous coal, the liquid is converted into vapor before it reaches the burner, and burned without the need of a wick. Some employ mantles. They are therefore distinguished as vapor or self-generating gas lamps. In 1868 a lighthouse lamp for burning mineral oils was introduced, and has been adopted in all parts of the world. These lamps have two or more concentric wicks, and yield a very powerful light. A safety lamp, used everywhere by miners, was invented in 1815.

LAMPBLACK, the soot or amorphous carbon obtained by burning bodies rich in that element, such as resin, petroleum,

and tar, or some of the cheap oily products obtained from it. The supply of air is limited or controlled so as to produce a smoky flame, and the smoke passes into a chamber with some arrangement for receiving the abundant deposit of soot. A large quantity of lamp-black has been made in the United States by the imperfect combustion of natural gas. Lampblack is a useful pigment for artists both in oil and water color, a coarser kind being employed by house-painters. It is the chief ingredient in Indian ink, and along with boiled linseed oil, forms printing ink. Of it is formed the pigment for the carbon paper used in autotypography. Lampblack is also employed in the preparation of some kinds of leather, and for various other purposes.

LAMPMAN, ARCHIBALD, a Canadian poet; born in Morpeth, County Kent, Ontario, Nov. 17, 1861. He was a graduate of Trinity College, Toronto (1882), and after 1883 held an appointment in the Postoffice Department at Ottawa. He published two collections of poems, "Among the Millet" (1888), and "Lyrics of Earth" (1895). He died in Ottawa, Feb. 10, 1899.

LAMPREY, the genus *Petromyzon*. There are two dorsal fins, both far back on the body. The sea, or spotted lamprey, *P. marinus*, is an eel-like fish, nearly three feet long, greenish-brown, marbled with darker brown and green on the back and sides. It attaches itself to rocks, boats, and to other fishes, by the mouth, exhausting the air. It is found in the United States, in England, and Africa. The fringe-lipped lamprey (*P. branchialis*) is called also the SANDPIPER (*q. v.*), the river lamprey, and the lampern. Lampreys, the family *Petromyzontidæ*, consists of eel-like fishes, with a naked skin and undergoing a metamorphosis. Their larval form was taken for a distinct fish, and was called ammocætes.

LAMPSHELLS, the familiar designation of certain brachiopodous mollusks, especially those of the genus *Terebratula*, which when closed bear a close resemblance to the shape of the old Roman lamp.

LAMSACUS (läm'sä-kŏs), or **LAMSAKI** (läm'sä-kē) (ancient Lampsacus), a maritime village of Asia Minor, on the Hellespont, nearly opposite Gallipoli. It was in ancient times given by Xerxes to Themistocles.

LAMU (lä'mö), an island and town on the coast of East Africa; lat. 2° 20′ S., the administration of which was granted in 1889 to the Imperial British East Africa Company.

LANA, a kind of close-grained, tough wood, obtained from the *Genipa americana*, a tree of the *Cinchona* family, and a native of British Guiana. The fruit, called genipap, yields a pigment called lana dye, used by the natives to stain their skins.

LANARK, the county town of Lanarkshire, Scotland; on a slope near the Clyde; 33 miles S. W. of Edinburgh. It has some weaving and other industries; pop. about 5,900. NEW LANARK, 1½ miles S. by W., is a small manufacturing village founded in 1783 by David Dale, and for 28 years the scene of the social experiments of his son-in-law, Robert Owen.

LANARKSHIRE, a south-western county of Scotland, bounded on the N. by the counties of Dumbarton and Stirling, on the E. by Prebleshire, Midlothian and Linlithgowshire, and on the S. by Dumfriesshire. The county embraces the valley of the Clyde, and the surface is diversified, being level in the N. W. and hilly towards the S. The loftiest height is Colter Fell. There are important mines in the N., the chief minerals being coal, lead and iron. In these mines are found the iron ore used in the iron-works of Glasgow, and the shipbuilding at Govan and Partick. Much of the soil is marsh, but there is considerable agriculture, as well as stock raising. The capital is Lanark. Area, 897 square miles. Pop. about 1,500,000.

LANCASHIRE, a northwestern county of England, bounded on the N. by Cumberland and Westmoreland, E. and S. by Yorkshire and Cheshire; and W. by the Irish Sea. The surface near the sea is level, but it gradually rises towards Cumberland and Yorkshire. The principal rivers are the Mersey, Ribble and Wyre. Though the wealth of the county is largely industrial, there is considerable agriculture, the chief products being wheat, oats and potatoes. It is rich in minerals, particularly in iron and coal. The cotton manufactures are extensive, particularly round Manchester, and other industries include the production of soaps, glass, silk, woolens and machinery. The shipbuilding yards are important. Liverpool, Manchester, Preston and Lancaster are the principal cities, and the valley of the Mersey between Liverpool and Manchester is the most thickly populated region in England, outside of London. Area, 1,869 square miles. Pop. about 5,000,000.

LANCASTER, a city and county-seat of Fairfield co., O.; on the Hocking river and canal, and the Hocking Valley, Pennsylvania Company, and other railroads; 32 miles S. E. of Columbus. It is the farming trade center for the county; and is engaged in the manufacture of agricultural implements, foundry products, flour, shoes, wood-pulp machinery and glass. It is the seat of the State Industrial School for Boys; contains a fine court house, high school; National bank, and many churches, and has electric light and street railroad plants; a good water supply; daily, weekly, and monthly periodicals. Pop. (1910) 13,093; (1920) 14,706.

LANCASTER, a city and county-seat of Lancaster co., Pa., on the Pennsylvania, the Philadelphia and Reading, and other railroads; 68 miles W. of Philadelphia. It is the manufacturing trade center for the county; is an important tobacco market; and is engaged in tobacco growing, cigar-making, cattle-raising, and the manufacture of cotton goods, iron and steel goods, shoes, and combs. It is the seat of Franklin and Marshall College; contains the Lancaster, St. Joseph's, and the County Hospitals, Children's Home, Mechanics' and Y. M. C. A. libraries, and Conestoga Park, and has gas and electric light plants, electric street railroads, National and State banks and about 50 churches. Lancaster was settled in 1729; was State capital in 1799–1812; and chartered a city in 1818. Congress sat in Lancaster for a few days in 1777. Pop. (1910) 47,227; (1920) 53,150.

LANCASTER, the name of a royal English house, which flourished in two lines. The first commences with EDMUND, son of Henry III. and Eleonora of Provençe, and brother of Edward I., employed by the latter as ambassador to Philip of France, and afterward as commander in the expedition for the recovery of Guienne. Born in London, 1245; died in Bayonne, in 1296. THOMAS, his son and successor in the earldom, cousin-german to Edward II., headed the confederacy of barons against Piers Gaveston, and finally shared the responsibility of his death with Hereford and Arundel. He was at length taken in arms against the sovereign, and beheaded at Pomfret, in 1322. HENRY (previously Earl of Leicester), brother and heir of Thomas, joined the conspiracy of Isabella and Mortimer against Edward II., and received the king into his custody at Kenilworth. He was subsequently appointed guardian and protector of the person of his son, Edward III. He died in 1345. HENRY, his son (previously Earl of Derby), after vainly endeavoring to make peace with John, King of France, under the mediation of the Pope at Avignon, was sent with an army into Normandy, and took part in the victory of Poitiers, and the subsequent French wars. About this time his title was changed to Duke of Lancaster. He died in 1362. The next Duke of Lancaster commences a new lineage, that of the princes opposed to the house of York. The first in the line was JOHN OF GAUNT, or GHENT, third son of Edward III.; born in 1339. He was married successively to the daughter of Henry, the last duke, and to the daughter of Peter, King of Castile. His name is one of the most celebrated in English history, and in the chivalry of the Middle Ages. He died in 1399. HENRY OF HEREFORD, the successor of John of Gaunt in the dukedom, was son to him by his first wife. He claimed the crown by descent, by the mother's side, from Edmund the first earl, who was popularly supposed to be the elder brother of Edward I. He became king by deposing Richard II., 1399. He reigned as Henry IV. till his death in 1422, and was succeeded by his son, HENRY V. The son of the latter also inherited the crown as HENRY VI., and in his reign the feuds of York and Lancaster broke out, which ended in the union of the two houses in the person of HENRY VII.

LANCASTER, capital of Lancashire, England, on the River Lore and a branch of the Midland railway, 230 miles N. W. by N. from London. It lies on an eminence overlooking Morecombe Bay to the W. and the buildings include the castle and church of St. Mary, several handsome modern churches, Storey Institute, museum and library, Palestine Hall, Ripley Hospital, Ashton Memorial and new town hall. The manufactures include cotton, silk, pottery and leather goods. The town goes back to Saxon times and its first charter was granted in 1193. Pop. about 43,000.

LANCASTER, DUCHY OF, a territorial hereditament of the British sovereign, and to all intents his private appanage. It is in Lancashire, mostly, and one of the titles of the King of Great Britain and Ireland is Duke of Lancaster.

LANCASTER SOUND, a W. outlet of Baffin Bay, in lat. 74° 20′ N., connected with Boothia Gulf on the S. by means of Prince Regent Inlet. Though this opening into the Arctic Ocean was discovered by Baffin in 1616, it was first navigated by Parry in 1819.

LANCE, a weapon consisting of a long shaft with a sharp point, much used, particularly before the invention of firearms. It is a thrusting weapon used on foot, but chiefly on horseback. In the Middle Ages the lance was held in the highest repute by knights and men-at-arms who formed the main strength of European armies; it was gradually superseded by the invention of gunpowder. The lances now in use among the European cavalry have a shaft of ash or beech-wood from 8 to 16 feet long, with a steel point 8 or 10 inches long, and, to prevent this from being cut off by a saber stroke, the shaft is guarded by a strip of iron on each side from 1½ feet to 2 feet long. The other end has an iron cap to prevent splitting. The point has a small pennon, intended to frighten the enemy's horses.

Free lance: Formerly a mercenary soldier, owing allegiance to no one permanently; hence a person who is free to assail any party or principle and is not pledged to any one more than temporarily.

Stink-fire lance: A fuse which, when ignited, emits a suffocating odor, and is used in military mining operations to dislodge counter-miners.

In carpentry, a pointed blade, usually employed to sever the grain on each side of the intended path of a chipping-bit or router. It is used in crozes, planes, and gauges of certain kinds. In the Greek ritual, a small knife used in the early part of the present Greek liturgy to divide the Host from the holy loaf. The action commemorates the piercing of our Lord's side. The priest makes four cuts in the loaf, and stabs it more than once, accompanying each action with appropriate texts of Scripture. In pyrotechnics, lances are small paper cases, filled with composition, and attached to light frames of wood, to mark the outlines of the figures in pyrotechnical devices. Various chemicals give the desired color to the flame.

LANCELET, *Amphioxus lanceolatus*, a transparent and iridescent fish about three inches long, with a fin extending nearly from the snout to the hinder extremity. The skeleton is imperfectly developed, the blood colorless; no proper skull or brain. It has affinities to the Ascidian. Its movements are active. It is found in temperate and tropical seas.

LANCER, a cavalry soldier armed with a lance. Lancers were introduced into European armies by Napoleon I., after the pattern of those in the Polish service. After the campaign of 1815, four regiments of English lancers were formed, and are classed to-day as medium cavalry. They are valuable in open country fighting, but were not employed to any great extent in the World War. The Uhlans in the German service are armed and used as in England, and are "medium cavalry." In dancing, the "lancers" are a certain set of quadrilles.

LANCEWOOD, a wood valuable for its great strength and elasticity. It is produced by the small tree *Guatteria virgata* (natural order *Anonaceæ*). Another species, *G. laurifolia*, yields the wood called white lancewood, which, however, is not much used. Lancewood is of great value to coach-builders, by whom it is used for shafts and carriage poles. The part used is the main trunk of the tree. It comes in small quantities from the West Indies, chiefly from Jamaica.

LANCIANI, RODOLFO AMEDEO (län-chä'-nē), an Italian archæologist; born in Rome, Jan. 1, 1847. He attained celebrity by investigating the ruins of classical Rome. Among his works are: "Ancient Rome in the Light of Recent Discoveries" (1888); "Pagan and Christian Rome" (1892); and "The Ruins and Excavations of Ancient Rome" (1897), "New Tales of Old Rome" (1901); "Wanderings in the Roman Campagna" (1909).

LANCINAO, a city in Italy, the residence of a bishop of the Catholic church. Located near the city of Chieti and about 9 miles from the Adriatic. Situated on three hills connected by large stone bridges which date from Roman times. It is in the center of an important fruit and oil district. Pop. about 20,000.

LANDAU (län'dou), a town of the Bavarian Palatinate, 11 miles W. of the Rhine and 17 S. W. of Spires. Founded and made an imperial city in the 13th century, it has some interesting old churches and was prominent in history as a fortress. During the Thirty Years' War it was taken eight times; in 1688 it was fortified by Vauban for Louis XIV., but surrendered four times during the war of the Austrian Succession. In 1816 Bavaria captured it; and in 1870–1871 its fortifications were razed. Pop. about 18,000.

LANDES, a province of southwest France bordering on the Bay of Biscay. The southern part is very fertile while the northern section affords pasture for sheep. The industries are not numerous or extensive, and are connected for the most part with the forests and their products. Area 3,615 square miles. Pop. about 290,000.

LANDFALL, the first sighting of land in the course of a voyage, or the land so sighted or discovered, as, the landfall of Columbus in Guanahani, in the New World.

LAND GRANT, a grant made by Congress to assist railroad companies to secure funds, by the sale of bonds secured by lands so granted, to construct lines of railway through parts of the United States where the local traffic would not pay the running expenses. About 215,000,000 acres of land were given to the various railroads of the country by the government. The Illinois Central received a strip 12 miles wide, running the whole length of Illinois; the Northern Pacific received 47,000,000 acres; the Atlantic and Pacific, 42,000,000; the Union Pacific, 13,000,000 and other roads in proportion. Congress has also made many grants of land to the several States and Territories to promote public education.

LANDGRAVE (LANDGRAF), a German title adopted in the 12th century to distinguish a governor of a district or province from the inferior counts under his jurisdiction. Also the title of each of three princes of the German empire, whose territories were called landgraviates.

LANDIS, KENESAW MOUNTAIN, an American jurist, born at Millville, Ohio in 1866. He was educated in the public schools of Logansport, Ind., and studied law at the Union College of Law in Chicago. In 1891 he was admitted to the bar and practiced law until 1905. He was appointed district judge of the Northern District of Illinois in 1905. He presided at the trial of many important cases including the Standard Oil rebate cases. In 1920 he was elected chairman of the National Baseball Commission.

LAND LEAGUE, an association projected by Charles S. Parnell, which came into being at a meeting held in Dublin, Nov. 18, 1879. Nominally the programme was the "three F's"—fixity of tenure, fair rent, and free sale (of the tenant's interest); but many speakers at Land League meetings, demanded that the soil should belong to the cultivator. Opposition by direct violence was deprecated, and recourse was had to boycotting. This state of things continued till the end of 1880, when 14 members of the Land League, of whom the most important were Parnell, Dillon, Biggar, T. D. Sullivan, and T. Sexton, were indicted. The trial, which took place early in 1881, was a fiasco, but it drew from Justice Fitzgerald the declaration that the Land League was an illegal body. A Ladies' Land League, under the presidency of Miss Anna Parnell, was then formed. The agitation increased, and the "No Rent" cry became more frequent. On Oct. 7 Gladstone denounced Parnell, and soon afterward Parnell, Dillon, Sexton, O'Kelly, and the chief officials of the League, were arrested and imprisoned in Kilmainham. They issued a manifesto calling on the Irish tenants to pay no rent during their imprisonment. The government replied by declaring the Land League an illegal body, and suppressed its branches throughout the country.

LAND OF BONDAGE, a Scripture name for Egypt, in allusion to the harsh treatment received by the Israelites during the latter part of their sojourn in that country.

LANDON, LETITIA ELIZABETH (MRS. MACLEAN), an English poet and novelist; born in Chelsea, London, Aug. 14, 1802. She was a poet of genuine feeling and descriptive power, and published under the pseudonym of "L. E. L.": "The Improvisatrice, and Other Poems" (1824); "The Golden Violet," etc. (1841); and several novels. In June, 1838, she married Mr. George Maclean, governor of Cape Coast Castle. She died in Cape Coast Castle, Africa, Oct. 15, 1838.

LANDON, MELVILLE DE LANCEY (pseudonym **ELI PERKINS**), an American humorist; born in Eaton, N. Y., Sept. 7, 1839. Among his works are: "History of the Franco-Prussian War" (1871); "Saratoga in 1901" (1870); "Thirty Years of Wit" (1890); "Eli Perkins on Money" (1895). He died in 1910.

LANDOR, WALTER SAVAGE, an English poet; born in Warwick, England, Jan. 30, 1775. He was educated at Rugby and Oxford. He inherited considerable wealth. During the Peninsular War, raising a troop of cavalry at his own cost, he fought for the Spanish cause till the restoration of Ferdinand VII. After his marriage, in 1811, he took up his abode in Florence, where he resided for several years, and where many of his works were written. His principal poetical works are "Gebir, Count Julian and other Poems"; "Hellenics"; "Poems and Inscriptions"; "Dry Sticks"; and "Last Fruit of an Old Tree" (1853). His most important prose work is the "Imaginary Conversations of Literary Men and Statesmen," which appeared in five volumes between 1824 and

1829. Landor neither sought nor won popularity. Haughty and of a savage independence, he probably despised his contemporaries. His works, most of them of exquisite finish, rank high with discriminating minds. He died in Florence, Italy, Sept. 17, 1864.

LANDRES-ET-ST. GEORGES, village near Buzancy, in the department of Ardennes, France, which was the scene of considerable fighting in the World War. During the war it was occupied by the Germans and suffered greatly in the struggle in the Meuse Valley. Pop. about 500.

LANDSCAPE-GARDENING, an art which deals with the disposition of ground, water, buildings, trees and other plants which go to the composition of verdant landscape. Such in a broad sense is the definition of the art; for it may be employed to create a beautiful and harmonious scene where only nature in barren wilderness reigned before, or to merely improve and adapt existing natural beauties and resources to the requirements of taste and convenience. Landscape-gardening has been practiced from the earliest dawn of civilization, but little of a reliable kind is known of the style or features of the gardens of the Jews, the Phœnicians, Assyrians, or even those of the ancient Greeks. The Romans introduced landscape-gardening into Britain; but the art was lost when the country was abandoned by them to the Saxons. As, however, it had meantime been fostered in France, it was probably reintroduced by the Normans. Henry I., according to Henry of Huntingdon, had a park (*habitationem ferarum*) at Woodstock. William Kent (1684–1748) and Lancelot Brown (1715–1783), better known as "Capability Brown," may be considered as the founders of modern English landscape-gardening. The American Society of Landscape Architects was founded in 1899, which awarded the first degree in 1901. There are now (1920) a number of institutions in different parts of the United States that award degrees for proficiency in the art.

LANDSEER, SIR EDWIN, an English painter; born in London, England, March 7, 1802. He began to draw animals when a mere child; at 13 he exhibited at the Academy, and the year following became a student. Henceforward he exhibited regularly at the Academy and the British Institution. In 1826 he was elected A. R. A.; in 1830 R. A.; in 1850 he was knighted, and in 1865 he declined the presidency of the Academy. He took the very highest rank among animal painters. Among his best-known works are: "The Cat's Paw" (1824); "The Return from Deer-Stalking" (1827); "High Life, and Low Life" (1831); "Highland Drover Departing for the South" (1835); "The Return from Hawking" (1837); "The Shepherd's Chief Mourner" (1837); "A Distinguished Member of the Humane Society" (1838); "There's Life in the Old Dog Yet" (1838); "Laying Down the Law" (1840); "Defeat of Comus" (1842); "Shoeing" (1844); "The Stag at Bay" (1846); "A Dialogue at Waterloo" (1850); "Monarch of the Glen" (1851); "Titania and Bottom" (1851); "Swannery Invaded by Sea-eagles" (1869); the celebrated work of sculpture, the Lions at the base of Nelson's Monument, Trafalgar Square, London. He died in London, Oct. 1, 1873. CHARLES LANDSEER (1799–1879), brother of the above, had a good reputation as a painter of subjects from English history and poetry. He was chosen Academician in 1845, and keeper of the Academy in 1851. THOMAS LANDSEER (1795–1880), brother; was celebrated as an engraver, and made many reproductions of his brother's works. JOHN LANDSEER (1769-1852), engraver, father of the above. He was elected associate engraver of the Academy, 1807; lectured on, and published several treatises on art.

LAND'S END, the extreme W. point of England, forming part of the county of Cornwall. It is a rocky promontory washed by the waters of the Atlantic.

LANDSHUT (länds'höt), a picturesque town of Lower Bavaria, on the Isar, 44 miles by rail N. E. of Munich; has breweries, manufactories of tobacco, wagons, hats, etc., and an active trade in corn. Of its 11 churches, St. Martin's (1477) has a steeple 436 feet high. The castle of Trausnitz (1232) was partially restored in 1872–1874. The Dominican monastery (1271) was the seat of the university. During the Thirty Years' War and the war of the Austrian succession Landshut was several times captured; and here, April 16, 1809, the Austrians drove back the Bavarians, but were in turn defeated by Napoleon five days later. Pop. about 25,000.

LANDSKRONA (länds'krō-nä), a seaport of Sweden; on the Sound, 16 miles N. N. E. from Copenhagen; it has a good harbor, carries on sugar-refining, shipbuilding, and the manufacture of tobacco and leather, exports considerable corn and butter, and imports raw sugar, coal, and grain. The town was a fort-

ress down to 1870. Opposite Landskrona in the Sound lies the island of Hven, on which Tycho Brahe built his observatory of Oranienborg. Pop. (1918) 18,062.

LANDSLIDE, or **LANDSLIP**, the sliding or settling down of a considerable portion of earth from a higher to a lower level; the earth which so slips or slides. Landslides are produced by earthquake disturbances, or by the action of water undermining the beds which fall. Notable landslides have occurred in the Rocky Mountains.

LANDS, PUBLIC, lands which the government owns and disposes of by sale or otherwise to States and individuals. These lands have been acquired largely by cession from other nations. The yielding to Congress by the various States of the rights to western territory was an important influence in the formation of the Constitution. Between 1781 and 1788 all the States having claims in the West ceded them to Congress, which immediately divided them into territories under the famous Northwest Ordinance of 1787. Public lands have been added to by Louisiana Purchase (1803), the cession of Florida (1819), the treaty of Guadeloupe Hidalgo with Mexico (1848), and the purchase of Alaska (1867). That portion of the lands held by the government and not sold is what is usually known as the "public lands."

The policy of the government was at first to sell large blocks of land by contract, then to sell in small lots and on credit, and after 1820 to sell for cash in lots to suit the purchasers. In 1862 Congress passed the "Homestead Law" providing that any person could secure 160 acres of public land if he settles on it for five years and improves the property.

Under this law more than 85 million acres of public land has passed to individuals. The same act appropriated to the States a tract of the public land on which to build and maintain agricultural colleges. In this way 10 more millions of acres were disposed of.

In addition to the selling of lands under general laws Congress has frequently made grants of land to persons as a reward for public services. The greater part of 10 million acres was given to soldiers of the Revolutionary War and the War of 1812; 60,000,000 acres were set aside to be granted to veterans of the Mexican War. Still another method of disposal has been to grant the lands to the different States sometimes for the purpose of building canals, or the building of drains and levees.

Even before the Civil War the policy was begun of granting lands to the various railroad companies to encourage the building of the roads. But the largest cession was made in favor of the trans-continental railroads which were being built during and after the Civil War. In all Congress granted to these railroads alone the stupendous total of 155,000,000 acres, an area equal in extent to some of the European countries. Congress continued its policy of handing out the public lands with a lavish hand until in President Roosevelt's administration a halt was called and many fraudulent schemes by land agents detected, some public land reclaimed, and the remainder of it more closely and carefully guarded. According to a recent statement of ex-Secretary of the Interior Lane the United States, on July 1, 1918, possessed 222,448,225 acres of public lands plus that held by the government in Alaska, which amounted to about 350,000,000 acres. In the year ending July, 1918, the Land Office had disposed of nearly 10,000,000 acres and had received $5,431,827.

LANDSTURM (länd'störm), a local militia of Germany, consisting of those of the reserve who are too old to serve in the LANDWEHR (*q. v.*). The landsturm is never called on to serve out of its own district except in case of invasion. When the Russians invaded East Prussia in 1914, the Landsturm played a leading part in driving them back.

LAND TAX, a tax levied on land. What is known as the land tax in England was imposed in the reign of William III. as a substitute for escuage, talliage, fifteenths, and other contributions. It was imposed annually from 1693 to 1798 at a varying rate. It was replaced by a perpetual rent charge on land, with power of redemption, and a tax annually imposed on personal property, the latter tax abolished in 1833. For a statement of the principles of Henry George favoring the raising of all public revenues by a single tax on land values, see SINGLE TAX.

LANDWEHR (länd'vähr), a kind of German militia composed entirely of men who have served in the regular army, and who in time of peace follow their usual trades or callings, except during the time when they are called out for their annual training.

LANE, FRANKLIN KNIGHT, an American public official; born near Char-

lottetown, Prince Edward Island, in 1854. He was brought to California in his early childhood and was educated at the University of California. He engaged in newspaper work and also studied law. He was admitted to the bar in 1889. From 1897 to 1902 he was corporation counsel of San Francisco. In the latter year he was Democratic candidate for governor of the State. From 1905 to March, 1913, he was a member of the Interstate Commerce Commission. He was also a member of the permanent International Railway Commission, representing the United States Government. On March 5, 1913,

FRANKLIN K. LANE

he became Secretary of the Interior in President Wilson's Cabinet and continued in this post until May, 1920, when he resigned. He was universally considered to be one of the strongest members of his Cabinet and one of its few members who remained in active service during the greater part of both the terms of President Wilson. During the war he was a member of the Central Committee of the American National Red Cross. In 1916 he was a member of the American-Mexican High Commission. In 1918 he was chairman of the Railroad Wage Commission and was also chairman of the International Industrial Conference held in 1919.

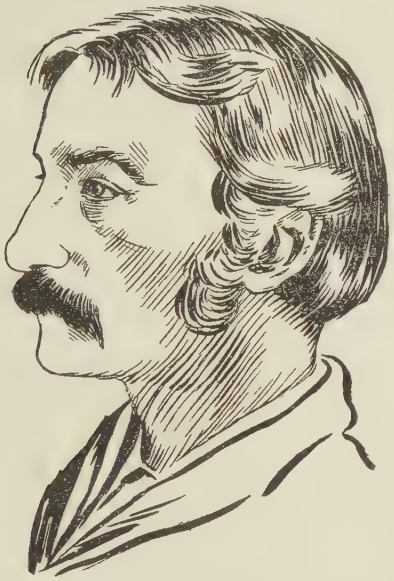
LANE, JOHN, an English publisher. Born W. Putford, England, 1854, and educated at Chulmleigh. Joint-founder with Elkin Matthews of the Bodley Head publishing business, 1887, dissolving partnership, 1894. Has since conducted the business alone, establishing a branch in New York, 1905. Founded "Yellow Book" (1894), and art edition of it from volume 4. His personal works include: "Introduction to Life of Sir James Bodley"; "Sir Caspar Purdon Clark."

LANE, RALPH NORMAN ANGELL, an American journalist and advocate of peace, writing under the name of Norman Angell, born in England in 1874. He was educated in England, France and Switzerland. In 1891 he engaged in ranching in the western part of the United States. From 1896 to 1898 he worked on various newspapers. He was editor of the "Paris Daily Messenger" from 1900 to 1904 and from 1905 to 1912 was General Manager of the "Paris Daily Mail." In 1911 he published "The Great Illusion" which had an enormous sale throughout the civilized world. The book was written in condemnation of the employment of force in international relations and urged the adoption of co-operation. Other writings along similar lines were "Patriotism Under Three Flags," (1903); "Peace Theories and the Balkan War," (1912); "Army and Industry," (1914); "America and the New World State," (1915). During the war he wrote much in the pacifist vein.

LANFRANC, 1st archbishop of Canterbury after the Norman Conquest; born in Pavia, Italy, about 1005. He was educated at Pavia for the law; about 1039 left Italy, and founded a school of law at Avranches; three years later took the monastic vows at the Benedictine monastery of Bec, and in 1045 was chosen its prior. He figured prominently in the Berengarian controversy as to the real presence, ranging himself against Berengarius (see BERENGARIUS OF TOURS). About 1053 he came into close contact with William of Normandy. Though he at first condemned this prince's marriage with his cousin, he afterward (1059) went personally to Rome to procure the papal dispensation for it. As a reward for this service William made him prior of his new foundation, the abbey of St. Stephen at Caen (1066), and in 1070 promoted him to the primacy of England by making him Archbishop of Canterbury in place of the deposed Stigand. He died in May, 1089, leaving commentaries, sermons, letters, and a work against Berengar.

LANG, ANDREW, an English author; born in Selkirk, March 31, 1844. He was educated at Edinburgh Academy,

St. Andrew's University, and Balliol College, Oxford. He published several volumes of charming verse, also "Custom and Myth" (1884); "Books and Bookmen" (1886); "Letters to Dead Authors" (1886); "Letters on Literature" (1889); "Old Friends" (1890); "Life of Sir Stafford Northcote" (1890); "How to Fail in Literature" (1890); "Es-



ANDREW LANG

says in Little" (1891); "The Making of Religion" (1898); "Defense of Sir Walter Scott" (1910), etc. He contributed to the best magazines and edited "Longman's Magazine." Died July 20, 1912.

LANGDON, STEPHEN HERBERT, a philologist. He was born at Monroe, Mich., in 1876, and educated at University of Michigan, Union Theological Seminary, and Columbia University. He studied also at Sorbonne and Collège de France, 1905–1907, and was ordained deacon in Paris, 1905. Studied at Leipzig 1907–1908, was professor in Assyriology at Oxford, 1908, and became British subject in 1913. His works include: "Annals of Ashurbanipal"; "Les Inscriptions du Wadi Brissa et du Nahr et Kelb"; "Babylonia and Palestine"; "The Sumerian Epic of Paradise."

LANGEMARCK, a village in Belgium, in West Flanders, 5 miles N. E. of Ypres. In the German campaign of 1915, it saw some of the first attacks in which the use of poison gas played a part, and as a result of such attacks was taken by the Germans with the villages of Pilkem, Het Sas, and Steenstraate, with many prisoners and guns in April. From that time on it figured prominently in the battles around Ypres, which was one of the most stubbornly contested areas in the war. During the third battle of Ypres in August and September it was taken by the British.

LANGENSALZA (läng'en-zält-sä), a town of the Prussian province of Saxony, 13 miles N. by W. of Gotha; has woolen and cloth manufactures. Here occurred, June 27, 1866, an encounter between 19,000 Hanoverians and 8,200 Prussians; the latter were at first defeated, but being reinforced compelled the former to capitulate two days later. Not far from the town is a sulphur spring that attracts many visitors annually. Pop. about 13,000.

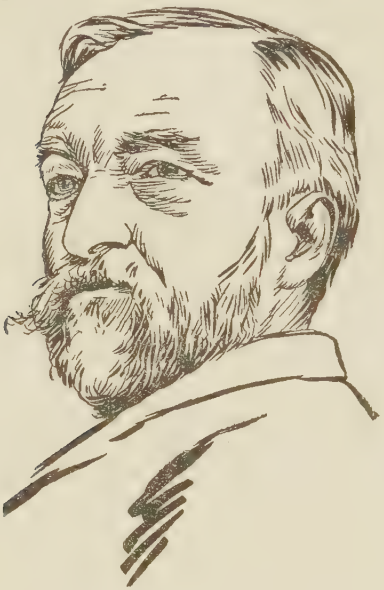
LANGFORD, JOHN ALFRED, an English author; born in Birmingham, England, Sept. 12, 1823. He was a prominent educator and publicist in his native city. Among his works are: "Religious Skepticism and Infidelity" (1850); "English Democracy" (1855); "Poems of the Fields and Town" (1859); and "Heroes and Martyrs, and Other Poems" (1890). Died 1903.

LANGHOLM, a market-town of Dumfriesshire, Scotland, at the junction of Ewes and Wauchope Waters with the Esk 23 miles S. S. W. of Hawick; has manufactured shepherd's plaid and tweeds since 1832. In 1890 Thomas Hope, a New York merchant and native of Langholm, left $400,000 to found a hospital here. On the site of the town the Douglases were defeated in the battle of Arkinholm (1455).

LANGLEY, SAMUEL PIERPONT, an American physicist and astronomer; born in Boston, Mass., Aug. 22, 1834; was graduated at the Boston High School; was Professor of Mathematics in the United States Naval Academy. He designed the system of railway-time service from observations which later came into general use; discovered an unknown extension of the invisible solar spectrum; and made numerous experiments to perfect an aerial machine. He was the first to succeed in demonstrating the practicability of mechanical flight. He became secretary of the Smithsonian Institution in 1887. His publications include "The New Astronomy"; "Researches on Solar Heat"; "Experiments in Aerodynamics"; "Internal Work of the Wind"; etc. He died Feb. 27, 1906.

LANGRES (lon*gr*), a town in the French department of Haute-Marne; at

an elevation of 1,530 feet above sea-level; 184 miles E. S. E. of Paris; a place of military importance as key of the communication between the Seine and the Rhone, it has been strongly fortified since 1868, and has a cathedral of the 12th and 13th century; pop. about 6,000. Langres (ancient Andomatunum) in Cæsar's time was the capital of the Lingones, a name corrupted into Langres.



SAMUEL P. LANGLEY

LANGSIDE, a S. suburb of Glasgow. Here, after her escape from Loch Leven, Queen Mary's forces were totally defeated by the Regent Moray, May 13, 1568. A monument (1887) commemorates the battle.

LANG-SON, a town in Tongking; N. E. of Ha-noi; near the frontier of the Chinese province of Kwang-si. It was a center of operations in the Franco-Chinese war of 1884–1885.

LANGTON, STEPHEN, an English statesman; born about 1150. He received his education in the University of Paris, fellow-student of the future Pope Innocent III.; he rose to the office of chancellor of the university. Innocent, after his elevation, gave Langton a post in his household, and afterward made him a cardinal (1206). On the occasion of the disputed election to the see of Canterbury in 1205–1207 Langton was recommended by the Pope to those electors who had come to Rome on the appeal, and, having been elected, was consecrated by Innocent at Viterbo, June 17, 1207. His appointment was resisted by King John; and Langton was kept out of the see until John made terms with Innocent in 1213. In the conflict of John with his barons Langton was their partisan, and his name is the first of the subscribing witnesses of Magna Charta. And, though the Pope excommunicated the barons, Langton refused to publish the excommunication, and was in consequence suspended from his functions by the Pope in 1215. But after the accession of Henry III. he was reinstated (1218) in his see. Died July 9, 1228.

LANGUAGE, human speech; the aggregate of those articulate sounds, called words, used to express perception and thought, accepted by and current among any community; the expression of thought by articulate sounds or words; the body of uttered and audible sounds by which, in human society, thought is expressed.

Also a particular set or aggregate of articulate sounds or words peculiar to a particular race, nation, tribe, or community; as, the English language, the French language, etc.; each of these often presents local varieties, to which the name of dialects has been given. Languages are divided according to two principles: First, morphologically, according to the structure of the language and the manner in which the sounds are formed or combined; and secondly; genealogically, according to their connection and relationship with respect to origin. The first class consists of three subdivisions of language, denominated isolating, agglutinating and inflectional. Isolating languages, of which Chinese is an example, consist entirely of monosyllabic, unchanging roots. The Scythian is the type of what is called an agglutinative structure, in which the root maintains itself unaltered in the whole group of derivatives and inflections, and each suffix has an unchanged form and office. The Basque and Armenian languages are also agglutinative, with this difference, that the roots which are joined together have been abbreviated, as in the Basque *ilhun*=twilight, from hill=dead+*egun*=day. To these languages it has been proposed to give the distinctive name of incorporating or polysynthetic languages. In inflectional languages, which are the most highly developed, the roots are capable of being modified by prefixes or suffixes, which were once independent words.

Languages, when classified genealogically, are divided into families or groups

connected by a community of origin. Thus the Indo-European (called also Aryan, or Indo-Germanic) is composed of seven great branches: The Indian, the Iranian or Persian, the Greek, the Italic, the Celtic, the Slavonic or Slavo-Celtic, and the Germanic or Teutonic. Each of these may again be subdivided. Thus the Germanic branch includes Mæso-Gothic, or the dialect of the Goths of Mæsia; the Low German languages, still spoken in the north of Germany, and including two important cultivated tongues, the Netherlandish and English; the High-German body of dialects, represented now by only a single literary language, the so-called German; and the Scandinavian division, written in the forms of Danish, Swedish, Norwegian and Icelandic. The Semitic family of languages is the next in importance. It includes Arabic, Syrian, or Aramaic, the Canaanitish dialects, chief among which are Hebrew and Phœnician, and the Assyrian and Babylonian dialects.

In music, in an organ an open metal flue pipe consists of foot, and language, and body. The language is a flat piece of metal fastened by its edge to the top of the foot, and which, by its shape, only permits the air to leave the foot in one direction.

LANGUE - DE - BŒUF (lo*ng*-duh-buhf′), a military implement, consisting of a broad-pointed blade, which was affixed to a staff, and received its name from its resemblance to an ox's tongue.

LANGUEDOC (lo*ng*-guh-dok′), a former province of France; bounded on the E. by the Rhône, on the S. by the Mediterranean and the counties of Foix and Roussillon, and on the W. by Gascony and Guienne; (now embraced in the departments of Lozère, Gard Ardèche, Aude, Hérault, Upper Loire, Tarn, and Upper Garonne); name derived from *langue d'oc*. During the period of the Roman empire this part of Gaul was prosperous and wealthy, a home of enlightenment. In 412 the Visigoths founded the kingdom of Toulouse (one of the chief cities of Languedoc, Montpellier being the other), and were only overthrown in 759 by Pepin the Frank. Two centuries later this part of France was immediately subject to the Count of Toulouse, one of the great feudatories of the kingdom. For the story of the religious wars of the 12th and 13th centuries see ALBIGENSES.

LANGUE D'OC (lo*ng* dok), the Southern French dialect, or PROVENCAL (*q. v.*), so called because the people use *oc* instead of *oui* for "yes," as in the N. provinces.

LANGUE D'OIL (dō-ēl′), or **LANGUE D'OUI** (dwē), the Romance dialect spoken in the Middle Ages in the N. of France and so called from its word for yes being *oil, ouil*, or *oui*. It was the language of the Trouvères and the progenitor of modern French.

LANIER, SIDNEY (-nēr′), an American poet; born in Macon, Ga., Feb. 3, 1842. He served in the Confederate army as a private soldier; studied law, and practiced it at Macon; but abandoned that profession and devoted himself to music and poetry. From 1879 till his death he was lecturer on English literature in Johns Hopkins University. The poem "Corn," one of his earliest pieces (1874), and "Clover," "The Bee,"

SIDNEY LANIER

"The Dove," etc., show insight into nature. His poetic works were collected and published (1884). He wrote also "The Science of English Verse" (1880); "The English Novel and the Principles of its Development" (1883). He edited or compiled "The Boy's Froissart" (1878); "The Boy's King Arthur" (1880); "The Boy's Percy" (1882). He died in Lynn, N. C., Sept. 7, 1881.

LANIIDÆ (-nī′i-dē), or **LANIADÆ** (-nī′a-dē), a family of thrush-like perching birds. The bill, which is long, has a deep notch or prominent tooth near the tip of the upper mandible, which is hooked. Swainson divided the *Laniidæ* into five sub-families: *Lamianæ* (tree shrikes), *Thamnophilinæ* (bush shrikes), *Dicrurinæ* (drongo shrikes), *Ceblepyrinæ* (caterpillar catchers), and

Tyranninæ (tyrant shrikes). Others divide them into the first two of these sub-families.

LANKA (lang'kä), the ancient Sanskrit name of the island of CEYLON (*q. v.*)

LANKAVATARA, one of the chief religious works of the Buddhists, which treats of their religious law, and of some of their most abstruse philosophical problems.

LANKESTER, EDWIN RAY, an English scientist; born in London, England, May 15, 1847. A graduate of Christ Church, Oxford, he was Linacre Professor of Human and Comparative Anatomy at that university, and among the first authorities of his time in biology and physiology. He was made Professor of Zoölogy in London University in 1874; secretary of the British Association, and president of its biological section; was founder and president of the Marine Biological Association at Plymouth; director of the natural history departments of the British Museum (1898–1907). He was editor of the "Quarterly Journal of Microscopical Science." Among his books are: "Monograph of the Cephalaspidian Fishes" (1870); "Developmental History of the Mollusca" (1875); "Degeneration, a Chapter in Darwinism" (1880); "The Advancement of Science" (1890); "Kingdom of Man" (1907); "Science from an Easy Chair" (1910); "Diversions of a Naturalist" (1915). He contributed many articles on nature to the "Britannica."

LANNER, the *Falco lanarius*, a species of hawk, especially the female of the species, the male being called a lanneret. It is a native of Southern Europe, North Africa, and Southwest Asia, and was much valued in falconry.

LANSDOWNE, HENRY CHARLES KEITH FITZ-MAURICE, MARQUIS OF, an English statesman; born Jan. 14, 1845. He succeeded to the marquisate in 1866; was a lord of the treasury 1869–1872; subsequently under-secretary for war and for India; in 1883 became governor-general of Canada; viceroy of India (1888); secretary for war (1895-1900); secretary of state for foreign affairs (1900–1905). During part of the World War he was a minister without portfolio in the Asquith coalition cabinet. WILLIAM PETTY (1737–1805), 1st marquis, better known as Earl of Shelburne, began political life in 1763; became prime minister in 1782, but was driven from power by the Fox and North coalition. In 1874 he was made Marquis of Lansdowne. His second son, LORD HENRY PETTY (1780–1863), succeeded his brother as Marquis of Lansdowne in 1809; was a successful debater in Parliament, generally acting with the Whig party. In 1827 he was home secretary; from 1831 to 1841 president of the council. He was leader of the opposition in the House of Lords from 1841 to 1846, when he entered the cabinet of Lord John Russell as president of the council. In 1852 he declined the premiership.

LANSFORD, a borough of Pennsylvania, in Carbon co. It is on the Lehigh and New England railroad. It is the center of an important coal mining region and its industries include the manufacture of silk goods, shirts, garage supplies, etc. Power is supplied from a large electric power plant in the neighborhood. Pop. (1910) 8,321; (1920) 9,625.

LANSING, a city, capital of the State of Michigan, and county-seat of Ingham co., on the Grand River and on the Grand Trunk, Lake Shore and Michigan Southern and several other railroads, 85 miles N. W. of Detroit. It is the farming trade center for the surrounding region, and is engaged in the manufacture of agricultural implements, flour, stoves, machinery, carriages, wagons, trunks, wheelbarrows, artificial stone and knit goods. It contains the State Capitol; State Hospital; State Library; United States government buildings; State School for the Blind; and the State Industrial School; and has electric light and street railroad plants; waterworks supplied from wells; abundant water power from the river; which is spanned by several bridges; National and State banks; about 20 churches; daily, weekly, and monthly periodicals. Pop. (1910) 31,229; (1920) 57,327.

LANSING, ROBERT, an American public official, born in Watertown, N. Y., in 1864. He graduated from Amherst College in 1886 and was admitted to the bar in 1889. Until 1892 he practiced law in Watertown. In that year he was appointed associate counsel for the United States in the Bering Sea Arbitration, and was also counsel for the United States during the Bering Sea Claims Commission, from 1896 to 1897. From 1903 he was counsel for the United States under the Alaskan Boundary Tribunal, and served as special counsel for international proceedings. He was appointed counselor of the State Department in 1914, and in the following year he was appointed Secretary of State ad interim on June 9, 1915. On June 23 of the same year he was ap-

pointed Secretary of State. He was chosen by President Wilson as one of the commissioners to negotiate peace in Paris in 1918. He continued to act as Secretary of State on his return from Paris. His action in calling together the members of the Cabinet during President Wilson's illness occasioned the resentment of the President and on the latter's recovery in 1920 he practically asked for the resignation of Mr. Lansing. Severe criticisms made by him on the

ROBERT LANSING

Treaty of Peace and the League of Nations Covenant were widely circulated and were never officially denied. It was generally conceded that he and the President were at variance in regard to the negotiations of the Treaty and to its final terms. On his retirement from office he continued the practice of law.

LANSQUENET (lans'ke-), a German common soldier, originally one belonging to the infantry, raised by the Emperor Maximilian toward the end of the 15th century; afterward, a soldier of fortune; a soldier who gave his services to any one who paid highest. The name became corrupted into lance-knight. Also the name of a game at cards.

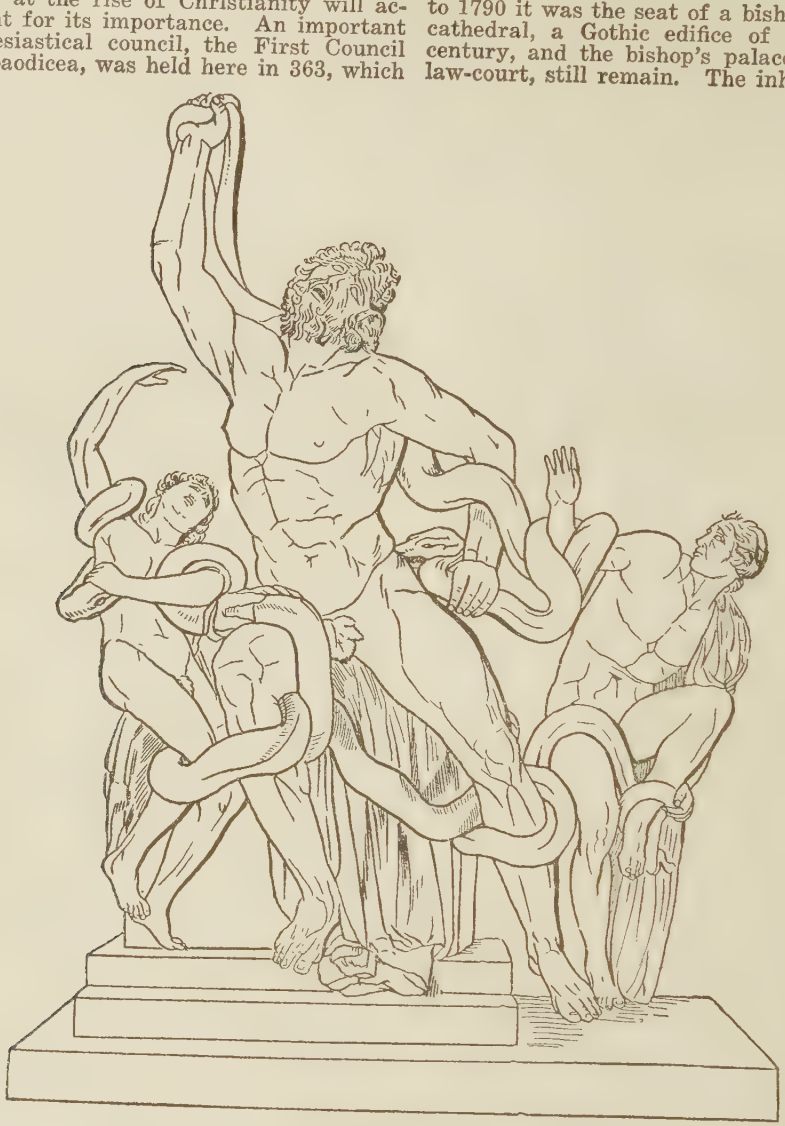
LANTERN, or **LANTHORN** (lan'-turn), a common contrivance used for carrying a lamp or candle in, consisting of a case or vessel made of tin, with sashes of some transparent substance, such as horn or glass. Lanterns are first spoken of by Theopompus, a Greek comic poet, and Empedocles of Agrigentum. Lanterns were used by the ancients in augury. The only representation of an Egyptian lantern that has come down to us probably did not differ sensibly from those spoken of in St. John xviii: 3, where the party of men which went out of Jerusalem to apprehend Jesus in the garden of Gethsemane is described as being provided "with lanterns and torches."

In architecture, a small structure on the top of a dome, or in other similar situations, for the purpose of admitting light, promoting ventilation, or for ornament, of which that on the top of the capitol at Washington may be referred to as an example. In Gothic architecture the term is sometimes applied to *louvres* on the roofs of halls, etc., but it usually signifies a tower which has the whole height, or a considerable portion of the interior, open to view from the ground, and is lighted by an upper tier of windows.

LAOCOÖN (lā-ok'ō-on), according to classic legend, a priest of Apollo, afterward of Poseidon, in Troy, who married against the will of the former god, and who warned his countrymen against admitting the wooden horse into Troy. For one or both of these reasons he was destroyed along with his two sons by two enormous serpents which came up out of the sea. The subject is represented in one of the most famous works of ancient sculpture still in existence, a group discovered in 1506 at Rome, and purchased by Pope Julius II. for the Vatican. It was carried by Bonaparte to Paris in 1796, but recovered in 1814. According to Pliny, it was the work of the Rhodian artists, Agesander, Polydorus, and Athenodorus. The best authorities place its date at a little before 100 B. C.

LAODICEA (-sē'ä), in ancient geography, the name of several towns of Asia, the most important of which was a city of ancient Phrygia, near the river Lycos, so called after Laodice, Queen of Antiochus Theos, its founder, built on the site of an older town named Diospolis. It was destroyed by an earthquake during the reign of Tiberius, but rebuilt by the inhabitants, who were very wealthy. A severe rebuke is addressed to its inhabitants in the Apocalypse. It fell into the hands of the Turks in 1255, was again destroyed in 1402, and is now a heap of ruins, known by the name of Eski-Hissar. Art and science flourished

among the ancient Laodiceans, and it was the seat of a famous medical school. The number of Jews who were settled here at the rise of Christianity will account for its importance. An important ecclesiastical council, the First Council of Laodicea, was held here in 363, which adopted resolutions concerning the canon of the Old and New Testaments and referring to ecclesiastical discipline. A second council, 476, condemned the Eutychians.



THE LAOCOÖN GROUP

LAON (lä-*ong*), the chief town of the French department of Aisne; 87 miles N. E. of Paris. Occupying a naturally strong position, it has been a fortress since the 5th century; its citadel is surrounded with ruinous walls. From 515 to 1790 it was the seat of a bishop. The cathedral, a Gothic edifice of the 12th century, and the bishop's palace, now a law-court, still remain. The inhabitants are noted market-gardeners. In the 10th century the city was the place of residence of the Carlovingian kings, and capital of Francia. At Laon, March 9 and 10, 1814, Napoleon I. was repulsed by the allies under Blücher and Bülow; and it surrendered to a German force, Sept. 9, 1870. In the fall of 1914, German forces captured the town and held

it until the Allied offensive in the summer of 1918. Pop. about 15,000.

LAOS (lä′ōs), a territory in the Indo-China peninsula, surrounded by the Shan states Annam, Tonking, and the Chinese province of Yunnan; area, estimated, 91,000 square miles; pop. est. 1,500,000; the soil is fertile, producing rice, cotton, tobacco, and fruits, and bearing teak forests; gold, tin, lead, and precious stones are found. Has been under French protectorate since 1892. Laos was the subject of four political agreements, the last in 1907 when the territory on the W. side of Nuking was partly restored to Siam.

LÂO-TSZE (lä-o-tsā′), a celebrated philosopher of China; generally reputed to have been the founder of Tâoism; which at the present day shares the allegiance of the Chinese with Confucianism and Buddhism under the appellation of San Chiào, born probably in 604 B. C. He was curator of the royal library in the capital city of Loh, not far from the present city of Loh-yang in Ho-nan. The designation Lâo-tsze means the "old philosopher." Nothing certain can be said of the length of Lâo's life. Sze-ma-Ch'ien, the historian of ancient China, tells us that he cultivated "the Tâo and its characteristics," his chief aim being to keep himself unknown; that he resided long at the capital, and then seeing the decay of the dynasty of Châu went away to the gate which led out of the royal domain toward the regions of the N. W.; that there he was recognized by Yin Hsî, the keeper of the gate, the place of which is shown in the present Shan Châu of Ho-nan, and was prevailed on to write out for him the treatise called the "Tâo Teh King," which has come down to us as the only record of his teaching. It is not easy, however, to say what he meant by his Tâo. "It was the originator of heaven and earth: it is the mother of all things." At the same time it is not a personal being. "It might appear," he says, "to have been before God." "It gave," says Chwang-tsze, the ablest of all Lâo's followers, "their mysterious existence to spirits and to God (or to gods)." The character Tâo properly means "path," "course," or "way"; and it is in this sense that Lâo uses it. His "great way" is but a metaphorical expression for the way in which things came at first into being out of the primal nothingness. Of the same kind should be the influence of the Tâo in the conduct of individuals and of government. The secret of good government is to let men alone. The appeal to arms is hateful. All learning is injurious. The wisdom of men defeats its own ends. Tâo works by contraries, and the secret of its strength is its weakness. In many of these teachings Lâo-tsze may seem to be only a visionary dreamer, but he enunciates many lessons of a very high morality. Its fundamental quality is humility. He even rises to the greatest of all moral principles, the returning of good for evil, and enunciates "recompensing injury with kindness." He nowhere speaks clearly of the state of man after death.

LA PALICE, a suburb of La Rochelle, where a new port was in recent years inaugurated with harbor works on a vast scale. It is situated on the Bay of Biscay midway between Nantes and Bordeaux.

LA PAZ, a department of Bolivia, bordering on Peru; area 171,130 square miles; pop. about 725,000. The La Paz cordillera contains the loftiest peaks of the Bolivian Andes, but in the E. the great mountains sink to the plain, and the country is richly watered. Capital, La Paz, at the foot of a steep valley 11,952 feet above the sea, 42 miles S. E. of Lake Titicaca. The houses are mostly of mud; the inhabitants, principally Indians and half-breeds, carry on an active trade in copper, alpaca wool, cinchona, etc.; pop. about 80,000.

LA PÉROUSE (lä pā-röz′), **JEAN FRANÇOIS DE GALAUP, COUNT DE**, a French navigator; born near Albi, Languedoc, France, Aug. 22, 1741. He distinguished himself in the naval war against England (1778–1783), especially by destroying the forts of the Hudson's Bay Company. He sailed on an expedition of discovery in August, 1785, with two ships, visited the N. W. coast of America, explored the N. E. coast of Asia, where by sailing through La Pérouse Strait between Saghalien and Yezo, he discovered that each of these was a separate island. In February, 1788, he sailed from Botany Bay; and after that all trace of him was lost. In 1826 the English Captain Dillon found that both of La Pérouse's ships had been wrecked on a coral reef off Vanikoro, an island lying N. of the New Hebrides. The account of the early portions of La Pérouse's voyage was published under the title of "Journey Round the World."

LAPIS LAZULI (lā′pis laz′ū-lī), a mineral of beautiful ultramarine or azure color, consisting chiefly of silica and alumina, with a little sulphuric acid, soda, and lime. The color varies much in its degree of intensity. Lapis lazuli

is often marked by white spots and bands. It is found associated with crystalline limestone among schistose rocks and in granite, in Siberia, China, Tibet, Chile, etc. The finest specimens are brought from Bokhara. It seems to have been the only stone of any intrinsic value known to the Egyptians under the Pharaohs. The valuable pigment, called ULTRAMARINE (*q. v.*) is made from it. It is one of the minerals sometimes called azure stone.

LAPLACE (lä-pläs′), **PIERRE SIMON, MARQUIS DE**, a renowned French mathematician and astronomer; born in Beaumont-en-Auge, France, March 28, 1749. He was Professor of Mathematics in the Military School; minister of the interior for six weeks under Napoleon (1799); vice-president of the senate (1803); peer; marquis (1817). In his great work "Mechanism of the Heavens" (5 vols. 1799–1825), he attacks nearly every problem arising out of the movements of the heavenly bodies, and in great part offers the solution. His "Exposition of the System of the Universe" (2 vols. 1796), is a less abstruse presentation of the arguments advanced in the "Mechanism." His famous researches into the laws of probability are summed up in the two works "Analytic Theory of Probabilities" (1812), and "Philosophical Essays on Probabilities" (1814). He died in Paris, March 5, 1827.

LAPLAND, the collective name for the extensive region in the N. of Europe inhabited by the Lapps; bounded on the N. by the Arctic Ocean, on the N. W. by the Atlantic, on the E. by the White Sea, on the S., by the parallel, roughly speaking, lat. 66° N. (though Lapps are sometimes found as far S. as lat. 63° N. in Norway and Sweden). It is estimated that the Lapps number 30,000, about four-fifths of their number being in Norway and Sweden and the remainder in Finland and Russia. Norwegian Lapland is a mountainous country, its coasts cleft by the narrow, steep-walled fjords; in Swedish Lapland the most characteristic features are ridges with narrow valleys between, the latter generally partly filled with long, narrow lakes; farther E., in Finnish and Russian Lapland, the surface is more level, the rivers and lakes become more numerous, and next the Arctic Ocean barren tundras, and many square miles are covered with forests of fir and spruce. Some of the lakes are of large size: Lake Enare or Inara, in Finnish Lapland, has an area of 1,147 square miles; Lake Imandra is 65 miles long by 9 wide; and Lake Nuot, 35 miles long by 7 wide. The river Tana, which flows N. to the Arctic Sea, is the second longest river of Norway. The summer is short and comparatively hot, owing to the fact that the sun scarcely ever sinks below the horizon during the three months that summer lasts. For seven or eight weeks in winter comparative darkness prevails, except when the snowy landscape is illuminated by the aurora borealis; the cold in winter is excessive, the thermometer generally indicating 60° of frost.

LA PLATA (lä plä′tä), the capital of the Argentine province of Buenos Aires, founded in 1882, after Buenos Aires city had been made the federal capital. The only buildings of note are the handsome capitol and other offices of the government, an observatory, several chapels and a fine railway station; has scores of hotels, inns, and cafés; a college, etc.; among the manufactories already established is one of cotton and woolen tissues; a canal connects a harbor which has been constructed at La Plata with a larger outer harbor at Ensenada, on the La Plata river; pop. about 90,500.

LA PLATA, RIO DE (rē′ō dā), a wide estuary of South America, between Uruguay on the N. and the Argentine Republic on the S., through which the waters of the Paraná and the Uruguay sweep down to the ocean; length about 200 miles. The N. shore is somewhat steep and lofty, but that along the province of Buenos Aires is low and flat. The estuary has no shelter from the tempestuous storms that come from the S. W.; and even the only good harbor, that at Montevideo, is open to the S. E. The affluents of the La Plata drain an area estimated at 1,600,000 square miles, and the outflow of the estuary is calculated at about 52,000,000 cubic feet per minute—a volume exceeded only by that of the Amazon. The estuary was discovered in 1515 or 1516 by Diaz de Solis, who was shortly afterward roasted and eaten by the Indians on its bank.

LAPORTE, a city and county-seat of Laporte co., Ind., on the Lake Shore and Michigan Southern, Pére Marquette and several other railroads; 59 miles E. S. E. of Chicago, Ill. It is the farming trade center for the county; and is also engaged in the manufacture of woolen goods, agricultural implements, wheels, hubs, etc. It is an attractive summer resort, having several beautiful lakes in its vicinity; contains a handsome court house, city hall, public library; and has an electric-light plant, waterworks supplied from one of the lakes; several

churches, National and State banks, daily, weekly and monthly periodicals. Pop. (1910) 10,545; (1920) 15,158.

LAPPS, the inhabitants of Lapland (*q. v.*) The Lapps, who call themselves Sabme or Sabmeladsjak (the Norwegians call them Finns), belong to the Ural-Altaic stock, and are consequently closely related to the Finns (Suomi). As a race they are the shortest people in Europe (four or five feet in height), and the most brachycephalic. In other respects they are spare of body, with dark, bristly hair and scanty beard, and short, often bandy, legs. The mouth is large, the lips thick, and the eyes small and piercing, but not obliquely set. The Lapps are usually distinguished as Mountain, Sea, Forest, and River Lapps. The Mountain Lapps, the backbone of the race, are nomads; they move constantly, seeking Arctic moss for their reindeer herds, their only source of wealth. The Sea Lapps, mostly impoverished Mountain Lapps, or their descendants, dwell in scattered hamlets along the coast, and live by fishing. The Forest and River Lapps are nomads who have taken to a settled mode of life; they not only keep domesticated reindeer, but hunt and fish. The nomad Lapps live all the year round in tents. The reindeer supplies nearly all their wants, except coffee, tobacco, and sugar. They live on its flesh and milk; they clothe themselves in its skin; and use it as a beast of burden. In winter, harnessed to a boat-shaped sledge (*pulk*), it takes them the longest journeys, across frozen lakes and rivers, and over the mountains and through the forests. It is computed that there are 400,000 reindeer in Lapland, for the most part semi-wild. In his personal habits and in his clothing the Lapp is the reverse of cleanly. He is, however, very good-natured. As a rule, he is "saving, almost miserly," "selfish and cute in all his dealings," not very trustworthy in the matter of speaking the truth, but on the whole inclined to take life easily. The Lapps all profess Christianity; those of Norway and Sweden belong to the Lutheran Church, those of Russia to the Greek Church. The Norsemen treated the Lapps as a subject race as early as the 9th century, but had to reconquer them in the 14th; the Russians followed suit in the 11th, and the Swedes in the 16th. From the 13th to the 17th century the Lapps were kept in a state little better than slavery by Swedish adventurers known as Birkarlians. But at the present day both the Scandinavian governments bestow on them every kindness.

LAPWING, in ornithology, the genus *Vanellus* and species *V. cristatus*. The specific name refers to the occipital feathers of the male in winter, which are very loose, long, and curved upward, so as to constitute an erectile crest. This crest, the top of the head, the front of the neck and breast are glossy black, the upper parts green with brilliant reflections. The sides of the neck, the under parts pure white, most of the tail black, lower coverts reddish, bill blackish, feet reddish brown. Length about a foot. It is seen in spring flying over fields and downs, turning somersaults in the air, and uttering a musical cry, from which it is often called peewit.

LAR, plural **LARES** (lā′rēz), more rarely **LARS**, a tutelary divinity, usually a deified ancestor or hero. The worship of the Lares is a species of Manes Worship, and was very prevalent among the Romans. They were of two kinds: domestic and public. Of the former the *Lar familiaris*, regarded as the founder of the family, and inseparable therefrom, was the most important, and corresponded to the eponymic hero of the Greeks. The latter was divided into Præstites, guardians of a whole city; Compitales watching over a certain portion of a city; Rurales, gods of the country; Viales, protecting travelers; and Marini or Permarini (Liv. xl: 25), gods of the ocean. (See PENATES.)

LAR, capital of the district of Laristan, in South Persia; on a wooded plain, 60 miles from the Persian Gulf and 170 S. E. of Shiraz; has trade in tobacco, cotton, and grain; pop. about 12,000.

LARA (lä′rä), a celebrated Spanish family, the founder of which was Ferdinand Gonzales, Count of Castile and Lara; died in 970. In 1130, the family was divided into two branches, the first from Manrique De Lara, which took the title of Viscount of Narbonne, for its stock; and the second deriving from Ordogno Perez, and preserving the title of Count of Lara, till it became extinct in the latter half of the 14th century. The members of this family played an important part in the civil wars of Castile, under Alphonso X., Sancho IV., Ferdinand IV., and Alphonso XI., with whom they often disputed the crown.

LARAMIE, a city and county-seat of Albany co., Wyo., on the Laramie river, the Union Pacific, and the Colorado, Wyoming and Eastern railroads; 58 miles N. W. of Cheyenne, the State capital. It is the trade center for a large stock-raising and mining section; and is also engaged in manufacturing; has large deposits of gold, silver, lead, graphite, antimony, cinnabar, and other minerals, and

rolling mills and machine shops. It is the seat of the State University, the State fish hatchery, and the State penitentiary; contains public and college libraries and St. Joseph's Hospital; and has electric light plants, waterworks, several newspapers. Pop. (1910) 8,237; (1920) 6,301.

LARAMIE MOUNTAINS, a range which extends through Wyoming and Colorado, and bounds the Laramie Plains on the E. and N. E.; the highest point is Laramie Peak, 10,000 feet high.

LARAMIE PLAINS, a plateau in Southern Wyoming, N. W. of Cheyenne, about 7,500 feet above sea-level.

LARAMIE RIVER, a river rising in Northern Colorado and flowing into the North Platte at Fort Laramie in Eastern Wyoming; length about 200 miles.

LARCENY, in law, the unlawful taking and carrying or attempting to carry away the personal property of another, with intent to appropriate said goods, and thereby deprive the rightful owner of their use; theft. In the United States in the different States larceny is variously graded, some commonwealths distinguishing it into grand and petit larceny, while others add the further distinction of simple and compound. Of the two former classifications the differentiating circumstance is the value of the goods taken, the theft of less than $50 in value (generally) constituting petit larceny, and of more than that amount grand larceny.

LARCH, *Abies larix*, sometimes called *Larix communis*, the larches being elevated into a genus. It is called more fully the common white larch. It is a deciduous tree, growing rapidly, and furnishes a durable timber, which, however, tends to twist and warp. The bark is used in tanning, being second in value, in this respect only, to oak. The common larch yields Venetian turpentine, the branches a saccharine substance, called Manna of Briancon, and when larch forests take fire, a gum called *Gummi orenbergense* exudes from the branches. There is a variety of the common larch with white, and another with red flowers. Yet another, the Russian larch, has cinereous bark.

LARCOM, LUCY, an American poet; born in Beverly Farms, Mass., in 1826. In her youth she was a factory girl in Lowell, Mass.; was a student for a time at Monticello Seminary, Godfrey, Ill.; afterward taught school; but the greater part of her life was devoted to literary work. In 1866–1874 she edited "Our Young Folks." She wrote "Ships in the Mist, etc.," stories (1859), and four or five volumes of poetry; also compiled and edited "Roadside Poems, etc." (1876); "Hillside and Seaside in Poetry" (1877); etc. She died in Boston, Mass., April 17, 1893.

LARD, the fat of the hog. Till after the first quarter of the 19th century lard was used only for culinary purposes and as the base of various ointments in medical use. Then large quantities were pressed at a low temperature, by which the stearine and oleine were separated. The former was used for candle-making; and the latter soon became an important article of commerce under the name "lard oil," a valuable lubricant for machinery. See STEARINE.

LAREDO, a city and county-seat of Webb co., Tex.; on the International and Great Northern, the Mexican National, and several other railroads; 153 miles W. of San Antonio. It is the trade center for the Rio Grande border. Laredo is in the great Rio Grande coal belt; is a health resort for victims of lung troubles; the seat of Laredo Seminary; contains Mercy and Mexican National Railroad Hospitals; and has manufactures of lumber and cigars, deposits of coal, iron, lead, zinc and copper, a large international and local trade, National banks, daily and weekly periodicals, and an assessed property valuation of $2,000,000. Pop. (1910) 14,855; (1920) 22,710.

LARGS, a watering-place of Ayrshire, Scotland, on the Firth of Clyde, 14 miles S. of Greenock. Here, Oct. 12, 1263, in a war between Scotland and the Norse colonies of Man and the Isles, Alexander III. defeated Haco of Norway, who with 160 ships and 20,000 men had descended on the coast of Ayrshire.

LARISSA (lä-rē'sä) (called by the Turks Yenisher), famous in ancient times as the chief town of Thessaly, now the capital of the monarchy of Larissa in Northern Greece; on the Salambria (ancient Peneus), in the fertile plain of Thessaly; has manufactures of silk and cotton goods and tobacco; and is the seat of a Greek archbishop. Larissa was the center of the Turkish operations in the war of Greek liberation; it was ceded by Turkey to Greece in 1881. Pop. about 18,000, one-third Greeks and one-third Turks.

LARK, the genus *Alauda*. Four species are the best known: the skylark, *A. arvensis;* the shorelark, *A. alpestris;* the crested lark, *A. cristata;* and the woodlark, *A. arborea*. The skylark, with some variations of coloring, leading some ornithologists to suppose that there may

be more species than one, extends all through Europe to the Himalayas and China. The name lark is given in the United States to the *Alauda cornuta*, the horned lark or shore lark, and in Australia to *Marifra horsfieldii*, or the bush lark. The tit-lark belongs to the family *Motacillidæ*.

LARKHANA (lär-kä'nä), the capital of a district called "the Eden of Sind," situated 150 miles N. of Haidarabad; has manufactures of silk and cotton cloth, and a great cotton market.

LARKSPUR (*Delphinium*), a showy and popular genus of garden flowers of the natural order *Ranunculaceæ*, natives of the temperate and cold regions of the Northern Hemisphere, and comprising both annual and perennial species. The well-known rocket larkspur (*D. Ajacis*), a native of Switzerland, and the branching larkspur (*D. consolida*), a native of most parts of Europe, doubtfully so of Great Britain, are familiar examples of the annual species; and Barlow's larkspur (*D. Barlowii*) and the great-flowered larkspur (*D. grandiflorum*) are not unfrequent examples of the perennial species. *D. glaciale* is one of the most distinctively alpine plants in the world. *D. Staphisagria*, corrupted to stavesacre, yields an alkaloid extract from its seeds, named *Delphine*, which is highly poisonous.

LARKSVILLE, a borough of Pennsylvania, in Luzerne co. It is on the Susquehanna River, and is the center of an important coal mining district. Pop. (1910) 9,288; (1920) 9,438.

LARNAKA (ancient Citium), the chief port of Cyprus. Even if Citium be not the Chittim of the Old Testament, it is certain that the King of Citium paid tribute to the Assyrian Sargon in 707 B. C., as appears from a cuneiform inscription on a bas-relief dug up at Larnaka in 1846, and now in the museum at Berlin. Carobs, or locust beans, cotton, and grain are exported. A most interesting fair called *kataklusmos*, held every year 50 days after the Greek Easter, is traditionally supposed to be the anniversary of the birth of Aphrodite, and is attended by Orthodox Christian Cypriots from all parts of the island.

LARNED, JOSEPHUS NELSON, author; born in Chatham, Ont., May 11, 1836; received a public school education; was on the editorial staff of the Buffalo "Express" in 1859-1872, and superintendent of the Buffalo Library in 1877-1897. He is the author of "Talks About Labor" (1877); "History for Ready Reference" (5 vols. 1895, 6th Vol. 1901); and "History of England for Schools" (1900); "Library of American History" (1902); "Books, Culture and Character" (1906). Died 1913.

LA ROCHEFOUCAULD (rōsh-fō-kō'), **FRANÇOIS DUKE DE, PRINCE DE MARSILLAC**, a French courtier and man of letters in the reign of Louis XIV.; born in Paris, France, Sept. 15, 1613. He acted a conspicuous part in the civil war of the Fronde, but he is chiefly remembered as the writer of "Reflections and Maxims." Its distinctive characteristic is that hard, worldly wisdom which finds selfishness at the bottom of everything. He also wrote "Memoirs of the Regency of Anne of Austria." He died in Paris, March 17, 1680.

LA ROCHELLE (lä-rō-shel'), a seaport of France, on an islet of the Bay of Biscay, formed by the islands Ré and Oleron. The inner harbor has two basins, in which ships of any size may remain afloat. The public buildings most worthy of notice are the arsenal, the palace, the town hall, the cathedral, and the great clock tower, remnant of the ancient fortifications. Pop. about 36,000. By the marriage of Eleanor of Guienne with Henry Plantagenet, afterward Henry II., May 18, 1152, this town came into the hands of the English, and was captured by Louis VIII. in 1224. In 1360 it was ceded to England, but was recovered by Bertrand du Guesclin in 1372. The Huguenots held it from 1557 to Oct. 28, 1628, when it surrendered to Louis XIII. They had sustained a siege from December, 1572 to 1573, when peace was made. It was again fortified by Vauban in the reign of Louis XIV. An attempt made by the English, in 1809, to destroy the French fleet here was unsuccessful.

LAROUSSE, PIERRE (lä-rös'), a French lexicographer; born in Toucy, Oct. 23, 1817. For several years he compiled valuable educational text-books. In 1864 appeared the first volume of his "Great Universal Dictionary of the Nineteenth Century" (completed 1876, 15 vols. with supplementary volumes 1878 and 1887). He also published two smaller works of the same class, the "New Illustrated Dictionary" and "Complete Illustrated Dictionary." He died Jan. 3, 1875.

LARTIUS, TITUS FLAVIUS (lar'-shi-us), the first appointed dictator at Rome, in 498 B. C.

LARVA, or **LARVÆ**, the first condition of an insect on its issuing from the egg, when it is usually in the form of a grub, caterpillar, or maggot. The

name applied to an immature insect from the time that it breaks through the egg shell, whatever state of development it may have reached *in ovo*. In the order *Orthoptera, Hemiptera,* and *Homoptera,* the larvæ resemble the perfect insect, except in wanting wings; while in the *Hymenoptera, Coleoptera, Neuroptera, Lepidoptera,* and *Diptera,* they completely differ. Those larvæ which have legs and prolegs are called caterpillars; others, with a head and with feet or no feet are called grubs; and those which want both a head and feet maggots.

LARYNGITIS (lar-in-jī′-), inflammation of the windpipe. It may be acute, chronic, mucous, or œdematous, and is produced by cold or damp or as an accompaniment of certain zymotic diseases such as scarlatina, smallpox, and measles. When membranous it is called croup, and may also be frequently found associated with diphtheria.

LARYNGOSCOPE (la-rin′-), an instrument, invented by Garcia, for obtaining a view of the larynx. It consists of a small plane mirror on a long, slender stem, which is introduced to the back of the throat, and a large concave mirror for reflecting light (solar or artificial).

LARYNGOTOMY (lar-in-got′), an operation by which an incision is made into the larynx to aid in the operation of breathing, when obstruction to it exists, to remove foreign bodies, or for any similar cause.

LARYNX, the windpipe. It is built up of the cricoid cartilage above the trachea, containing the arytenoid cartilages and vocal ligaments, terminating in the glottis and epiglottis; it is the organ of voice.

LA SALLE, a city in La Salle co., Ill.; on the Illinois river, and on the Illinois Central and the Chicago, Rock Island, and Pacific and the Chicago, Burlington and Quincy railroads; 99 miles S. W. of Chicago. It is the center of a large trade by river, canal, and rail; is in a rich bituminous coal region; and is engaged in coal mining, zinc smelting and the manufacture of sulphuric acid, hydraulic cement, sewer pipe, bottles, clocks and ornamental pressed brick, and common brick. It is the seat of St. Mary's Hospital; has a public library; good sewerage system, waterworks, hospitals, a National bank, electric light and street railroad plants, and daily and weekly newspapers. Pop. (1910) 11,537; (1920) 13,050.

LA SALLE, ROBERT CAVELIER, SIEUR DE, a French explorer; born in Rouen, France, Nov. 22, 1643. Settling in Canada at the age of 23, he began his travels with an attempt to reach China by descending the Ohio river, which he supposed to empty into the Pacific. As soon as he found that the great S. streams drained into the Gulf of Mexico he formed the project of descending the Mississippi to the sea. After many and severe hardships this long voyage was concluded, and the arms of France set up at the mouth of the great river on April 9, 1682. Two years later an expedition was fitted out to establish a permanent French settlement on the Gulf, which should secure France's claims to the Mississippi valley. But La Salle's bad fortune pursued him; he mistook Matagorda Bay for a mouth of the Mississippi, landed there, and then spent two years in unsuccessful journeys to discover the great river, while his colonists and soldiers gradually dwindled away. His harshness of manner, more than his want of success, embittered his followers, and he was assassinated by some of them March 20, 1687.

LA SALLE COLLEGE, an educational institution in Philadelphia, Pa., founded in 1863 under the auspices of the Roman Catholic Church; reported at the close of 1919: Professors and instructors, 20; students, 250; president, Brother E. Richard.

LAS CASAS, BARTHOLOMÉ DE (läs-kä′säs); a Spanish prelate; born in Seville, Spain, in 1474. In his 19th year he accompanied his father, who sailed with Columbus, to the West Indies. On his return to Spain he embraced the ecclesiastical profession, in order that he might act as missionary in the Western Hemisphere. Never did man more zealously endeavor to effect a great and good object. Twelve times he crossed the ocean, to plead at the foot of the Spanish throne the cause of the wretched Indians. He was made Bishop of Chiapa in 1544; but he resigned his see in 1551, returned to his native country, and died in Madrid, in July, 1566. The most valuable of his writings is "General History of the Indies."

LAS CASÉS (läs-käz), **EMMANUEL DIEUDONNÉ, COMTE DE**, a French historiographer; born near Revel, Languedoc, France, in 1766. He was a lieutenant in the navy before the Revolution, but then fled from France to England. After Napoleon became consul, Las Casés established himself as a bookseller in Paris. A work, "Historical Atlas" (1803–1804), attracted the attention of the emperor, who made him a baron, and

employed him in the administration. After Waterloo he obtained leave to share the exile of Napoleon in St. Helena, where the ex-emperor dictated to him a part of his "Memoirs." In 1816 Las Casés was sent back to Europe, and after Napoleon's death published "Memorial of St. Helena" (8 vols. 1821–1823). Las Casés died in Passy, France, May 15, 1842.

LA SERINA, a city in Chile, the capital of the province of Coquimbo. Situated on very high ground overlooking the Pacific Ocean, the climate and outlook are delightful. It is connected with Valparaiso, 215 miles distant, by a railroad. Population about 17,500.

LASKER, EMANUEL, a German chess player; born in Berlinchen, Prussia, Dec. 24, 1868. He inherited his great abilities at the game to some extent, and about 1890 took a high place at a chess tournament which was held in Berlin, where he defeated some of the leading masters. In 1892 he visited England, and defeated Blackburne, the English expert. In the New York tournament of 1893 he won his games with all the 13 leading players, including Steinitz, the champion of the world. A set match with Steinitz took place at Moscow in December, 1896, and January, 1897, and this Lasker won by 10 games to 2, 5 being drawn.

LAS PALMAS, chief town of the Canary Islands on the N. E. coast of Gran Canaria; is the seat of a bishop, and has sea-bathing and ship-building yards. Pop. about 63,000.

LASSA. See LHASSA.

LASSALLE, FERDINAND (lä-säl'), a German agitator, founder of the German social Democracy; born of Jewish parents named Lassal, in Breslau, April 11, 1825. Before entering politics he had earned high distinction in philosophical thought. Among his writings of this period are "Franz von Sickingen," a historical drama (1859); "The Philosophy of Heraclitus the Obscure" (2 vols. 1858); "The System of Acquired Rights" (2 vols. 1860); "Fichte's Philosophy and the Popular Mind of Germany" (1862). He first came into the political arena as the spokesman of the German workingman in 1862, when he published the "Workingmen's Programme." For this he was arrested and imprisoned. He further developed the Socialist program in an "Open Reply to the Central Committee" (1863). His last work was a spirited attack on one of the foremost opponents of the Social Democracy. His talents won him the admiration even of his enemies. He died in Geneva, Aug. 31, 1864.

LATAKIA (lä-tä-kē'yä) (Turkish Ladikiyeh), a formerly important seaport of Syria, with a sanded-up harbor, on a rocky cape 75 miles N. of Tripoli. It possesses remains of Roman buildings, having been a flourishing port during the early empire. The present town occupies the site of the ancient Laodicea ad Mare, founded by Seleucus Nicator, and named after his mother. The principal exports are Latakia tobacco, grain, silk, sponges, and oils. Pop. about 25,000.

LATERAN, CHURCH OF ST. JOHN, the first in dignity of the Roman churches, and styled in Roman usage "the Mother and Head of all the churches of the city and the world." As cathedral church of Rome it surpasses St. Peter's in dignity. It is called Lateran from its occupying the site of the splendid palace of Plautius Lateranus. It was originally dedicated to the Saviour; but Lucius II., who rebuilt it in the middle of the 12th century, dedicated it to John the Baptist; in 1586 it was completely demolished by Sixtus V., and rebuilt from plans by Fontana. It has been the scene of five councils, regarded as œcumenical by the Roman Church. The Lateran Palace was the habitual residence of the Popes till the 14th century. It is now under the control of the Italian government. Pius IX. converted a portion of it into a museum of classical sculpture and early Christian antiquities.

LATERAN COUNCILS, in Church history, certain councils held in the Church of St. John Lateran in Rome. In all five general councils held, besides an important council, not œcumenical, against the Monothelites in A. D. 649.

LATHE, a machine for turning and polishing flat, round, cylindrical, or other shaped pieces of wood, ivory, metal, etc., in which the object revolves while it is shaped or polished by a tool applied to it.

LATHROP, GEORGE PARSONS, an American author; born in the Hawaiian Islands, Aug. 25, 1851; was for some years employed editorially on the "Atlantic Monthly"; wrote "Rose and Roof-Tree," verses (1875); "A Study of Hawthorne" (1876); "An Echo of Passion" (1882); "Spanish Vistas" (1883); "Dreams and Days," verses (1892); "Gold of Pleasure," (1892), a novel; "Story of Courage," with Rose Hawthorne. He died in New York, April 19, 1898.

LATHROP, JULIA CLIFFORD, an American public official, born at Rock-

ford, Ill., in 1858. She graduated from Vassar College in 1880. She spent some years as a volunteer resident of Hull House, Chicago, and was an active worker in various reform movements. She made a special study of the care of the insane and the better education of children. She was a member of the Illinois State Board of Charities for many years. On the establishment of the Children's Bureau of the Department of Labor, she was made its chief. During the World War she did important work as the head of this bureau in the alleviation of suffering of children in Europe.

LATHROP, ROSE HAWTHORNE, an American poet; born in Lenox, Mass., May 20, 1851; daughter of Nathaniel Hawthorne; married George Parsons Lathrop in 1871; became interested in bettering the condition of the destitute and diseased women of New York City, especially those suffering with cancer, and established the St. Rose's Free Home for this class. She was the author of "Along the Shore" (poems); "Memories of Hawthorne"; and "A Story of Courage" (with her husband).

LATIMER, HUGH, an English reformer; born in Thurcaston, Leicestershire, England, about 1490. He was educated at Cambridge, and received the degree of M.A. in 1514. He was then, as he says himself, "as obstinate a Papist as any in England," but became a Protestant. He strenuously promulgated the doctrines of the Reformation, and being an admired preacher, his influence on his hearers was consequently very great. His fame reaching Henry VIII., the King made him bishop of Worcester. Latimer expostulated with the king on his cruelties; afterward resigned his bishopric; and, on the fall of Lord Cromwell, his patron, he was sent to the Tower, where he remained till the accession of Edward VI. When Mary came to the throne, he was committed to the Tower, whence he was sent, with Ridley and Cranmer, to Oxford, to hold a conference with several doctors from the universities. He pleaded poor health and was permitted to give in a long profession of faith in writing, for which he was condemned as a heretic, and imprisoned for more than a year in the common jail of Oxford. He was then again summoned before the commissioners, but refusing to recant, he was condemned and burned, near Balliol College, at the same stake with David Ridley, Oct. 16, 1555. Latimer, after commending his soul to God, thus cheered his brother-sufferer: "We shall this day, my lord, light such a candle in England as shall never be extinguished." His sermons have often been printed.

LATIN, the language of the ancient Romans. For the literature, see the names of the various Latin authors.

LATIN CHURCH, the Church of the West, as distinguished from the Oriental Church.

LATIN CROSS, a cross the transverse beam of which is one-third the length of the vertical one.

LATINS, the ancient inhabitants of Latium, in Italy. In very early times the Latins formed a league of 30 cities, of which the town of Alba Longa, said to have been built by Ascanius, the son of Æneas, became the head. Rome was originally a colony of Alba, and thus the language of the Romans is known as the Latin language.

LATIN UNION, THE, a political combination formed in 1865 by France, Italy, Belgium, and Switzerland. These countries entered into an agreement by which the amount of silver to be coined yearly was fixed for each member of the union. Greece joined the union in 1868, Spain in 1871, and subsequently Serbia and Rumania also became members. Some of the South American States also used the Latin Union coinage. Spain alone of the countries of the union coins a gold piece not used by the others. The unit of coinage in the Latin Union is the franc; it has different names elsewhere, as, in Italy, the lira; in Serbia, the dinar; in Spain, the peseta; but the value is always the same. The perfect decimal system of France is also used, and the convenience of the coinage has led to its wide adoption. It is the most widely circulated coinage system in Europe, being used by about 148,000,000 people.

LATITUDE, the angular distance of a star from the ecliptic, measured on a great circle drawn through the star and the pole of the ecliptic. This method of measurement is now not much used, that by right of ascension and declination having largely taken its place. The latitude of a place on the surface of the earth, is its angular distance from the equator, measured on the meridian of the place. Latitude is N. or S., according as the place is N. or S. of the equator. Circles whose planes are parallel to that of the equator are called circles of latitude, or parallels of latitude, because the latitude of every point of each circle is the same. The latitude of a place is always equal to the inclination of the axis of the earth to the horizon of the place, and conversely. A degree of latitude is

60 nautical or about 69½ English miles. In surveying, the distance between two E. and W. lines drawn through two extremities of a course. If the course is run toward the N., the latitude is called northing, if toward the S., it is called southing.

LATITUDINARIAN, a party in the Church of England, about the middle of the 17th century, who, wearied by the fierce religious disputes of the time, aimed at a broad or comprehensive system which might reconcile the contending parties, or at least diminish the vehemence of their controversies. They were attached to Episcopacy, but were prepared to welcome as brethren those who believed in other forms of church government.

LATIUM (lā'shi-um), a considerable division of Central Italy deriving its name from the city Latium, said to have been founded by King Latinus, 1240 B. C. Æneas, according to the legend, settled here with a colony of Trojans, 1181 B. C., and the new colonists and aboriginal inhabitants, having united into one nation under his government, were known as the Latins. They formed a confederacy of towns, with Alba Longa at their head; and after the destruction of that town by the Romans, 665 B. C., the whole territory was reduced to subjection. The Latins rebelled 502 B. C. and a treaty was concluded between them and the Romans 493 B. C., by which their independence was acknowledged, and an alliance concluded between the two powers. They joined other states against Rome, and the last war waged against them commenced 340 B. C., and terminated 338 B. C., in the defeat of the Latins, after which time they ceased to exist as an independent people. The Roman franchise, 91 B. C., bestowed upon all people of Italy who were allies of Rome.

LATOUR D'AUVERGNE, THÉOPHILE MALO CORRET DE (lä-tör' dō-vārny), dubbed by Napoleon "First Grenadier of the Armies of the Republic"; born in Carhaix, Finistère, of an illegitimate branch of the family of the Dukes of Latour d'Auvergne, Nov. 23, 1743. He enlisted as a musketeer in 1767, and distinguished himself at the siege of Port Mahon in 1782. But he steadily refused advancement in military rank, and was killed, a simple captain, June 28, 1800, at Oberhausen, near Neuburg in Bavaria. His remains were carried to Paris and interred in the Panthéon on Aug. 4, 1889. French biographies are full of instances of his daring valor, his Spartan simplicity of life, and his chivalrous affection for his friends. When he died the whole French army mourned for him three days; his saber was placed in the Church of the Invalides at Paris. Latour d'Auvergne was also a student of languages, and wrote "Language, Origin and Antiquity of the Bretons."

LA TRAPPE, a Cistercian abbey of Northern France, in a narrow valley of Normandy, 30 miles N. E. of Alençon. Founded in 1140, it had become in the 16th century a haunt of licentious monks known as the bandits of La Trappe. In the 17th century, however, the Abbot Armand Jean le Bouthelier de Rancé instituted a vigorous reform, and caused the monks to adopt a life of severe asceticism. The austere Trappists prayed 11 times daily, spoke no word to each other except the salutation of *Memento mori* (Remember thy death), fed on fruit and pulse, and every evening dug their own graves. At the Revolution the Trappists were obliged to leave France, but at the Restoration they returned to their old homes, though expulsions took place again in 1880. La Trappe continues to be the head monastery of the order, and they have also establishments in various parts of Europe, and in America. The professed brothers wear a dark-colored frock, cloak, and hood, which covers the whole face. A female order of Trappists was founded by Louisa, Princess of Condé.

LATROBE, a borough of Pennsylvania, in Westmoreland co. It is on the Loyalhanna Creek, and on the Pennsylvania and the Ligonier Valley railroads. It is in the center of an important agricultural and coal and iron mining district. Its industries include the manufacture of coke ovens, steel mills, paper mills, flour mills, glass factories, etc. It is the seat of a convent and a monastery, and a hospital. Pop. (1910) 8,777; (1920) 9,484.

LATTER-DAY SAINTS, CHURCH OF JESUS CHRIST OF. See MORMONS.

LATVIA, a province of the Republic of Russia, along the southern part of the Baltic littoral. It consists of the former Russian province of Courland, four southern districts of the former Russian province of Livonia, and three western districts of the former Russian province of Vitebsk. It has a total area of about 24,440 square miles. The government consists of a Constituent Assembly of 152 members. The first elections were held on April 17 and 18, 1920, on the basis of universal suffrage. There is a State Council of 102 members.

Latvia is mainly an agricultural country. It has vast possibilities which are as yet undeveloped. There are about 340 miles of seacoast. The majority of the population is Protestant, but in a part of Courland there are many Roman Catholics. The principal towns are Riga, Libau, Mitau, Windau, and Dvinsk. The population is about 2,500,000.

LAUCK, (WILLIAM) JETT, an American economist, born at Keyser, W. Va., in 1879. He graduated from Washington University in 1903. He served as assistant professor of economics and political science at Washington and Lee University from 1905 to 1908. From 1907 to 1910 he was in charge of industrial investigation of the United States Immigration Commission. In the following year he was chief examiner of the Tariff Board. He served as expert and consulting statistician on many important commissions concerned with the investigation of railroad rates and kindred subjects. From 1917 he was statistician of the United States Shipbuilding Labor Adjustment Board. In 1920 he published several reports relating chiefly to the alleged profiteering of large corporations.

LAUD, WILLIAM, an English prelate; Archbishop of Canterbury in the reign of Charles I.; born in Reading, Berkshire, England, Oct. 7, 1573. He was educated at the free school of his native place and at Oxford; was ordained in 1601; became president of his college in 1611; accompanied James I. to Scotland, as one of his chaplains, in 1617; was installed prebendary of Westminster in 1620; and obtained the see of St. David's in the following year. On the accession of Charles I. he was translated to the see of Bath and Wells, and in 1628 to that of London. In 1630 he was elected chancellor of the University of Oxford; which he enriched with an invaluable collection of manuscripts in a great number of languages, ancient, modern, and Oriental. He was promoted to the see of Canterbury, and chosen chancellor of the University of Dublin. His endeavors to introduce the liturgy into Scotland created him numerous enemies. At the commencement of the Long Parliament, therefore, he was impeached by the Commons and sent to the Tower. After lying there three years he was brought to his trial before the Lords, by whom he was acquitted, but the Lower House passed a bill of attainder, declaring him guilty of treason, which they compelled the peers to pass; and the archbishop was accordingly beheaded on Tower Hill, Jan. 10, 1645.

LAUDANUM, or more correctly TINCTURE OF OPIUM, the most generally used of all the preparations of opium. It is obtained by macerating the sliced or powdered drug in dilute spirits, and filtering. Laudanum is a powerful anodyne and soporific, but is more liable to cause headache than the solution of one of the salts of morphia.

LAUDER, SIR HARRY, a Scotch concert hall singer and comedian, born in Portobello, Scotland, in 1870. When he was still a boy he was discovered to have an unusual voice and was induced to follow the stage as a profession. His first notable success was made in Belfast. Appearing in London, he at once became a favorite and this was followed by success in America, which he visited for the first time in 1907. This was followed by frequent tours in the United States, where his popularity continued. During the war he did important work in the entertainment of the soldiers in the field, and in recruiting. He was knighted as a result of this work. In 1918 he wrote an autobiography.

LAUGHLIN, JAMES LAURENCE, an American economist, born in Deerfield, Ohio, in 1850. He graduated from Harvard University in 1873. From that year until 1883 he was instructor of political economy at Harvard and was assistant professor in that branch until 1887. He was professor of political economy at Cornell University from 1890 to 1892, and was professor and head of the department of political economy at the University of Chicago from 1892 to 1916. He was a member of many important economic societies and lectured much on economic subjects, both in the United States and abroad. His writings include "Study of Political Economy" (1885); "History of Bimetallism in United States" (1886); "Facts About Money" (1895); "Later-Day Problems" (1909).

LAUNCESTON, the second city of Tasmania, is to the N. of the island what Hobart, the capital, is to the S.—the chief port of entry and mart of trade. It stands in a valley inclosed by hills at the junction of the Esk with the Tamar. It is accessible to ships of considerable burden, and carries on a thriving commerce with the principal Australian ports. The town is supplied with water from St. Patrick's river. Launceston was incorporated in 1858, and raised to a city in 1889. Pop. about 24,000.

LAUREL, the genus *Laurus* and specially the bay, *L. nobilis*, the laurus of the Romans and the daphne of the

Greeks. Linnæus called it *nobilis* because it was anciently reserved for priests, heroes, and sacrifices. In its native region—the S. of Europe—it is 30 or even 60 feet high, but sends forth so many suckers and low shoots as to have a shrubby appearance. The color is deep green, inclining to olive; the ripe berries dusk, purple, or black. There are glands on the backs of the leaves, which excrete nectar. The berries, the leaves, and the oil have a fragrant smell, an aromatic astringent taste, and narcotic and carminative properties. Water distilled from them contains prussic acid. *Cerasus laurocerasus,* called the common or broad-leaved laurel, has oblong, remotely serrated pale-green evergreen leaves; flowers in racemes. A native of Trebizond, its leaves, bark, and fruit are virulent poisons.

LAUREL, a city of Mississippi, the county-seat of Jones co. It is on the Mobile, Jackson, and Kansas City, the Gulf and Ship Island, and the Queen and Crescent railroads. It is an important commercial and manufacturing center, and has cotton mills, railroad shops, wagon works, and lumber mills. The city contains two parks, a city hall building, and other notable public buildings. Pop. (1910) 8,465; (1920) 13,037.

LAURENS, HENRY, an American statesman; born in Charleston, S. C., in 1724. Descended from a French Huguenot family, he early realized a fortune in business. On the outbreak of the American Revolution, Laurens, in 1776, was elected a delegate from his native State to the Continental Congress, and became its president, which office he held till the close of 1778. Next year, being appointed minister-plenipotentiary to Holland, he was captured on his way thither by a British frigate, and taken to London, where he was confined as a prisoner in the Tower; and his papers having proved the complicity of Holland in the colonial revolt, a war between Great Britain and Holland followed. On his release, Laurens was appointed one of the commissioners for negotiating peace, and proceeded to Paris, where, Nov. 30, 1782, he, conjointly with Franklin and Jay, signed the preliminaries of the treaty. Died in Charleston, Dec. 8, 1792.

LAURENS, JOHN, an American military officer; son of the preceding; born in South Carolina in 1754. After receiving his education in England he joined the American Continental Army in 1777, becoming aide-de-camp and secretary to Washington. Laurens so highly distinguished himself in the battles of Germantown and Monmouth, and in other operations as to earn the title of the "Bayard of the Revolution." In 1780 he was sent to France to negotiate a loan. He was killed in action at the Combahee river, S. C., Aug. 27, 1782.

LAURENTIAN GROUP, a vast series of rocks, 30,000 feet in thickness, and covering an area of at least 200,000 square miles N. of the St. Lawrence river. It is lower, and consequently older, than the Cambrian. It consists of an immense series of crystalline rocks, gneiss, micaschist, quartzite, and limestone. It is divided into Upper and Lower Laurentian. The Upper, more than 10,000 feet thick, consists of stratified crystalline rocks. It mainly consists of felspars. The Lower Laurentian, about 20,000 feet in thickness, is unconformable with the Upper. It consists mainly of a reddish gneiss, with orthoclase felspar; interstratified with thin hornblendic and micaceous schists, with beds of usually crystalline origin, and others of plumbago. The Laurentian volcanic rocks of Ottawa, Argenteuil, etc., in Canada, consist of fine-grained dark greenstone or dolerite.

LAURENTIAN MOUNTAINS, a range in Canada extending for over 3,000 miles from Labrador to the Arctic Ocean, forming the watershed between Hudson Bay, the St. Lawrence, and the Great Lakes, and dividing the same bay from the sources of the Mackenzie river. Some of the peaks attain a height of 4,000 feet. The rock formation belongs to the fundamental metamorphosed sedimentary deposits known as the Laurentian system.

LAURIER, SIR WILFRID (lō-ryā′), a Canadian statesman; born in St. Lin, Quebec, Nov. 20, 1841. He was educated for the legal profession. He embarked on his political career in 1871, when he was elected as a Liberal to the Quebec Provincial Assembly; and here his eloquence and ability at once brought him to the front. In 1874 he was elected to the Federal Assembly. From the first he advocated a policy of free trade, and, though a Catholic, his spirited resistance to the attempted dictation of the Roman Catholic hierarchy in regard to the Manitoba school question, showed that he was independent of such influence in political affairs. In 1891 he was chosen as leader of the Liberal Party, and at the general election of 1896 he led his followers to a notable victory, becoming Premier of the Dominion. His tariff legislation during 1897, giving Great Britain the benefit of preferential trade with Canada, aroused much enthusiasm both in the colony and

in England. He was appointed a member of the Privy Council. Died 1919.

LAURIUM, a mountain (1,171 feet) of Attica, Greece, connected by a railway with Athens. It was famous in ancient times for its silver mines, but these were already exhausted in Strabo's day. Since 1874, however, the great heaps of slag have been profitably worked.

LAURIUM, a village of Michigan, formerly known as Calumet. It is on the Mineral Range and the Copper Range railroads. It is the center of one of the largest and richest copper producing districts in the United States. Pop.. (1910) 8,537; (1920) 6,696.

LAUSANNE (lō-zän'), capital of the Swiss canton of Vaud, on the S. slope of the Jura Mountains, close to the N. shore of the Lake of Geneva, on which the village of Ouchy (where Byron wrote "The Prisoner of Chillon") forms its harbor. Here Gibbon resided and wrote the greater part of the "Decline and Fall." John Kemble, the actor, died and was buried here. Pop. (1918) 74,000.

LAUZANNE, STÉPHANE JOSEPH VINCENT, a French journalist. He was born in 1874, and received his education in the public schools of France. He early entered the newspaper field, distinguishing himself both as a writer and in the executive side of the profession. As editor of the Paris "Matin" he introduced the method of big headlines, supposed to be characteristic of American papers, and greatly increased its circulation. He is an officer of the Legion of Honour.

STÉPHANE LAUZANNE

LAVA, a term used vaguely of all molten matter existing within or flowing in streams from volcanic vents, but more specifically confined to the latter, the former being called trap. The lower part of it which has consolidated slowly and under pressure, tends to be of stony consistency, while the upper is scoriaceous. Lavas vary greatly in composition. Some are trachytic, as in the Peak of Teneriffe; many are basaltic, as in Vesuvius and Auvergne; others andesitic, as in the volcanoes of Chile. Some of the most modern in Vesuvius consist of green augite, and many of those of Etna of augite and Labrador felspar.

LAVAL (lä-väl'), capital of the department of Mayenne, and one of the most picturesque towns of France, on the Mayenne river; 46 miles E. of Rennes. Its chief buildings, both dating from the 12th century, are the cruciform cathedral and the old ducal castle of the Trémouilles (a prison now), in whose courtyard young Philip de la Trémouille, Prince de Talmont, was guillotined by the Republicans in 1794. Since the 13th century, when Flemish weavers settled here, the town has been the center of a district noted for its linen manufactures—linen, ticking, sacking, etc. In the vicinity the Vendeans, under Larochejaquelein gained a victory over the Republicans.

LAVAL UNIVERSITY, a French Catholic institution for higher education, founded in Quebec, Canada, in 1852. It includes faculties of theology, law, medicine, and arts. There are about 500 students. Rector, Monsigneur A. E. Gooseliu.

LAVA MILLSTONE, a hard and coarse basaltic millstone, obtained from quarries near Andernach on the Rhine.

LAVATER, JOHANN KASPAR (läv'ä-ter), a Swiss theologian; born in Zurich, Switzerland, Nov. 13, 1741. He was pastor of a church in his native town, and his religious writings won him great fame throughout Germany. In his "Christian Songs" (1776) he seeks to counteract the principles of Illuminism and Rationalism; and he has the same aim in the drama "Abraham and Isaac" (1776), in the epics "Jesus the Messiah, or the Coming of the Lord" (1780), "Joseph of Arimathea" (1794), etc. His views of the inner life of the soul find expression in his "Private Diary of a Self-Observer" (1772–1773). But his

most celebrated work is "Physiognomic Fragments" (1775–1778). He died in Zurich, Jan. 2, 1801.

LAVA WARE, a kind of coarse ware resembling lava, made from iron slag, cast into urns, tiles, table-tops, etc.

LAVEDAN, HENRI, a French novelist and critic, born in 1859. After some years as a journalist and story writer, he began the writing of plays at which he achieved great success. The subjects selected by him were social life of Paris society, problems of domestic life and historical episodes. Several of his plays were translated into English and presented in the United States. In 1898 he was elected to the French Academy.

LAVERNA, among the Romans and Latins, the patron goddess of thieves. A grove on the Via Salaria at Rome was sacred to her. The origin of the name is doubtful.

LAVOISIER, ANTOINE LAURENT (lä-vwä-zyā), a French chemist, one of the founders of modern chemistry; born in Paris, France, Aug. 16, 1743. He demonstrated experimentally the acidifying action of "dephlogisticated air," or, as he renamed it, "oxygen gas." He was the first to analyze water, and to obtain by synthesis "fixed air," or as he called it, "carbonic acid." He first gave system to chemistry, and not least of his services to science was his part in devising—with Guyton de Morveau—a consistent scheme of chemical nomenclature. Besides papers contributed to the proceedings of learned societies, he wrote an "Elementary Treatise on Chemistry" (1789). He was a farmer-general of taxes, and was guillotined in Paris, May 8, 1794.

LAW, a term variously defined, according to its application. The laws of nature, as expounded by men of science, are general propositions as to the order in which physical events have occurred, and will probably recur; the moral law, or the law of God, is a body of truth thrown into the form of rules for the guidance of human conduct. But when we speak of law we usually mean to indicate the law which is set and enforced by civilized states. Law, in this sense, derives its sanction, or binding force, from the penalties by which men are constrained to obey it or punished for breaking it. The earliest source of law is custom; the customary rules of a primitive community formed the basis of the civil law at Rome, as they form the basis of the common law in England and the United States. Customary law is rigid and formal; in a progressive society it is relaxed and improved by the use of legal fictions, by the influence of equity, and by legislation. The civil law, amended and rationalized by successive prætors and emperors, has furnished most of the nations of modern Europe with the greater part of their legal rules and ideas; even England, while refusing to borrow directly from the *Corpus Juris Civilis* (body of the civil law), has derived no small part of her law from that source. Scotch law has largely drawn its principles and nomenclature from Roman law.

It is usual to distinguish public law (constitutional and criminal) from private law (which applies to personal status, family relations, property, and contract). Constitutional law is of especial importance in the United States. Canon law is not received, as an entire system, by any modern state; but its rules are followed in defining the powers and functions of ecclesiastical persons. The law of nations, or international law, is also divided into public and private.

LAW, A(NDREW) BONAR, an English statesman born in Canada, in 1858. Early in life he moved to Glasgow, Scotland, where he engaged successfully in business. He was elected to

A. BONAR LAW

Parliament, where he distinguished himself by ability in debate. He became leader of the Opposition and on the accession of his party to power he succeeded A. J. Balfour as leader of the House. He was appointed Chancellor of the

Exchequer of the Lloyd George Coalition Ministry in 1916. In addition to being a member of the War Cabinet, he continued as active leader of the House of Commons. He secured the passage of enormous budgets necessary during the war. Following the general election of 1918, he ceased to be Chancellor of the Exchequer and became Lord Privy Seal. He took a prominent part in all war measures passed in the House and in 1920 was also active in the discussion of Irish and other questions.

LAW, JOHN, a Scotch financier; born in Edinburgh, Scotland, April 21, 1671. His father was a goldsmith and banker, and proprietor of the estate of Lauriston, near Edinburgh. Law early showed a most remarkable talent for arithmetic, algebra, and kindred sciences. At 20 he removed to London, but was soon compelled to flee, in consequence of a duel in which he killed his adversary. He went to Amsterdam, where he studied credit operations. About the year 1700 he returned to Edinburgh, a zealous advocate of a paper currency; but his proposals to the Scotch Parliament met with an unfavorable reception. He now visited different parts of the Continent, where he won and lost vast sums in gambling and speculation, but sought in vain to win the favor of governments for his financial schemes. At last he settled in Paris, and, in company with his brother William, set up in 1716 a private bank. This was soon so successful and prosperous that the Duke of Orleans, the regent, adopted in 1718 Law's plan of a national bank, and issued prodigious quantities of bank notes, which enjoyed perfect credit. In 1719 Law originated his "Mississippi Scheme" and was made a councilor of state and comptroller-general of finances. When the bubbles burst he became an object of popular hatred and found it best to quit France. He died in Venice, Italy, March 21, 1729.

LAW, WILLIAM, an English divine; born in King's Cliffe, Northamptonshire, England, in 1686. He was educated at Emmanuel College, Cambridge. He wrote against Bishop Hoadley, and was also the author of some valuable practical books, as, "A Serious Call to a Devout and Holy Life"; "A Treatise on Christian Perfection," etc. He died in King's Cliffe, April 9, 1761.

LAWFELDT, or **LAVELD**, the scene, close to Maestricht, Belgium, of the defeat of the combined Austrian, Dutch, and English forces under the Duke of Cumberland by the French commanded by Marshal Saxe, July 2, 1747.

LAWN TENNIS. See TENNIS.

LAWRENCE, a city and county-seat of Douglas co., Kan.; on both sides of the Kansas river and on the Atchison, Topeka, and Santa Fé, and the Union Pacific railroads; 40 miles W. of Kansas City. It is the farming trade center for Douglas and parts of two other counties; and is principally engaged in manufacturing, which is greatly promoted by the excellent water power furnished by the river. It is the seat of the Kansas State University, Haskell Institute, and Indian Industrial School; contains a hospital, public library, and several public parks; and has flour and paper mills, barbed-wire, ice, shirt, sash and door factories, and foundry and machine shops. There are electric light plants, waterworks, several National and State banks, daily, weekly and monthly periodicals. The city was settled by an anti-slavery colony from the East in 1854 and during the Civil War was almost entirely destroyed by Confederate raiders. Pop. (1910) 12,374; (1920) 12,456.

LAWRENCE, a city and one of the county-seats of Essex co., Mass., on both sides of the Merrimac river, and on the Boston and Maine railroad; 29 miles N. W. of Boston. The river at this point has a gradual descent of 26 feet in a distance of half a mile, affording excellent water power. It is dammed by a solid granite wall 900 feet long and 30 feet wide, the water being drawn off through a system of canals and distributed to the various factories. Lawrence is a great cotton and woolen milling center, and has extensive manufactures of foundry and machine shop products, wall paper, stationery, cars, carriages, sewing machines, steam engines, boilers, hardware, belting, hats, boots and shoes and flour. The city has an admirable public school system, public library, court house, waterworks system, numerous public parks, daily and weekly newspapers, electric lights, and electric street railways connecting Andover, Haverhill, Lowell and neighboring towns. The charitable and educational institutions include the City Hospital, Roman Catholic Hospital, Essex County Truant School, and High school. Pop. (1910) 85,892; (1920) 94,270.

LAWRENCE, JAMES, an American naval officer; born in Burlington, N. J., Oct. 1, 1781; entered the American navy as a midshipman, 1793; was with Decatur as his 1st lieutenant in the engagement against Tripoli. While in the Mediterranean he rose to the command successively of the "Vixen," "Wasp," "Argus," and "Hornet." While cruising with the latter off Delaware, Feb. 24,

1813, he met the British vessel "Peacock," which he captured after a brilliant engagement of only 15 minutes. On his arrival in the United States he was received with acclamation; was made post captain and given command of the frigate "Chesapeake." He was preparing for sea, in the roads of Boston, when the British frigate, the "Shannon," Captain Broke, appeared off the harbor and challenged the "Chesapeake," which Lawrence, though his ship was in an incomplete condition as to crew, armament and stores, resolved to accept. He accordingly put to sea as morning broke, June 1, 1813. The "Shannon" bore away at his approach, but the "Chesapeake" hauling to and firing a gun, the enemy followed suit and the action began. At almost the first fire Lawrence was severely wounded in the leg. Nothing daunted, the brave commander continued the engagement, which was soon brought to close quarters. Lawrence now received a mortal wound in the abdomen, and as he was carried below, he cried out these immortal words, "Don't give up the ship." The battle, however, did not last long. Captain Broke grappled with the "Chesapeake," and boarding, overpowered her. The struggle lasted 11 minutes. Captain Lawrence lingered four days in extreme suffering, and died on the "Chesapeake," at Halifax, June 5, 1813, and was buried with military honors in Halifax by the British. His uniform coat, chapeau, and sword are now in possession of the New Jersey Historical Society.

CAPTAIN JAMES LAWRENCE

LAWRENCE, JOHN LAIRD MAIR, LORD, a British administrator; born in Yorkshire, England, March 4, 1811. Educated at the college of Haileybury, he went to India in 1829, where his rare administrative ability caused him to receive the appointment of chief commissioner of the Punjab in 1853. The entire wisdom of this appointment was demonstrated during the Indian Mutiny of 1857. By the influence which he had gained over the Sikhs, Lawrence was able not only to keep the Punjab quiet, but to collect native forces and send them to assist in the early capture of Delhi. He was known as the savior of India, and his services were rewarded by his being made governor-general in 1863. On his return to England in 1869 he was raised to the peerage under the title of Baron Lawrence of the Punjab and of Grately. He died in London, June 26, 1879.

LAWRENCE, ST., GULF OF. See GULF OF ST. LAWRENCE.

LAWRENCE, ST., RIVER. See ST. LAWRENCE RIVER.

LAWRENCE SCIENTIFIC SCHOOL. See HARVARD UNIVERSITY.

LAWRENCE, SIR THOMAS, an English portrait painter; born in Bristol, England, May 4, 1769. At the age of 18 he entered as a student of the Royal Academy. In 1791 he was elected associate, and in 1798 full member. After Reynolds' death he was appointed limner to the king in 1792 and was knighted in 1815; and on Benjamin West's death in 1820 he succeeded him as president of the Royal Academy. Lawrence was the favorite portrait painter of his time. His talent was overrated during his lifetime; his work scarcely rises above the conventional level. He died in London, Jan. 7, 1830.

LAWRENCE, WILLIAM, an American Protestant Episcopal bishop, born in Boston, in 1850. He graduated from Harvard University in 1871, and from the Episcopal Theological School, in 1875. He was ordained priest in 1876, and from that year to 1884 was rector of Grace Church, Lawrence, Mass. He was connected with the Episcopal Theological School from 1888 to 1893. In the latter year he was consecrated bishop of Massachusetts. He was the author of "Visions and Service" (1896); "Life of Roger Wolcott, Governor of Massachusetts" (1902); "Study of Phillips Brooks" (1903). During the World War he was chairman of the War Commission of the Protestant Episcopal Church.

LAWRENCE UNIVERSITY, a coeducational institution in Appleton, Wis.;

founded in 1847 under the auspices of the Methodist Episcopal Church; reported at the close of 1919: Professors and instructors, 48; students, 489; president, Samuel Plantz, Ph.D., D. D.

LAWTON, a city of Oklahoma, the county-seat of Comanche co. It is on the St. Louis and San Francisco and the Chicago, Rock Island, and Pacific railroads. It is the center of an important farming and cotton raising district. The city contains Fort Sill, an army post, the Fort Sill Indian School, the Wichita National Forest and Game Preserve, and a park. Pop. (1910) 7,788; (1920) 8,930.

LAWTON, HENRY WARE, an American military officer; born in Manhattan, O., March 17, 1843; entered the army April 16, 1861; became a sergeant of Company E, 9th Indiana Infantry, April 18, 1861, and rose to be a lieutenant-colonel in 1865. In the same year he entered the regular army as a 2d lieutenant in the 41st Indiana Infantry; transferred to 4th U. S. Cavalry in 1871, promoted to captain 1879. In 1876-1879, took active part in expeditions against hostile Sioux and Utes. General Miles appointed him (1886) to lead a force into Mexico to capture Geronimo and his band. At the beginning of the Spanish-American war Lawton was made a major-general of volunteers, (1898). He commanded the 2nd Division of the 5th Army Corps before Santiago where he earned the title "Hero of El Caney." Transferred to the Philippines after the war he distinguished himself in operations against insurgents. On Dec. 19, 1899, while on the firing lines at San Mateo, he was killed by an insurgent sharpshooter.

LAYARD, SIR AUSTIN HENRY, an English archæologist; born in Paris, France, March 5, 1817. In 1839 and following years he traveled in the East, and in 1845 began his celebrated excavations on the site of ancient Nineveh, publishing the results in 1849–1853. In 1852 he entered Parliament in the Liberal interest; became under-secretary for foreign affairs in 1860, commissioner of works in 1869, and ambassador to the Porte in 1877 under Lord Beaconsfield's government, when he accomplished the annexation of Cyprus. He is best known by his books: "Nineveh and its Remains" (1849), and "Discoveries in the Ruins of Nineveh and Babylon" (1853). He died in London, England, July 5, 1894.

LAY READER, in the Anglican Church, is a layman who receives authority to read the lessons or a part of the service. The incumbent can permit any one to read the lessons, but for authority to read the morning or evening prayer a license from the bishop of the diocese is required. The absolution, of course, cannot be read by a lay reader, or any part of the communion service. Readers have existed as an order in the church from at least the 3d century; in the Greek Church they constitute the first, in the Latin Church the second of the minor orders that lead to the priesthood. The appointment of readers in the Anglican Church received the sanction of the bishops in 1866; but they were not to be ordained.

LAZAREFF, PORT, a fine natural harbor, 40 to 60 feet deep, and 8 square miles in extent, in Broughton Bay on the E. side of Korea. It is 390 miles from Vladivostok to the N. and 480 from Port Hamilton to the S., and is free from ice in winter.

LAZARET, or **LAZARETTO**, a name given in Italy, and other parts of Southern Europe, to certain public buildings for the reception of the poor, and such as are afflicted with contagious disorders. The name is derived from St. Lazarus, who is the patron saint of lepers; and during the Middle Ages, when leprosy was common in Italy and other parts, the hospitals in which the lepers were confined received that name, and the lepers themselves were called *lazzari*.

LEA, HENRY CHARLES, an American publisher and historian; born in Philadelphia, Pa., Sept. 19, 1825; entered his father's publishing house in 1843; became the principal in 1865; and retired 1880. Between 1840 and 1860 he wrote many papers on chemistry and conchology. After 1857 he devoted his attention to European mediæval history, his chief works being: "Superstition and Force" (1866); "An Historical Sketch of Sacerdotal Celibacy" (1867); "History of the Inquisition of the Middle Ages" (1888); "A History of Auricular Confession and Indulgences" (1896); "The Moriscos of Spain" (1901); etc. He died in 1909.

LEAD (Greek, *molybdos;* Latin, *plumbum*, whence the chemical symbol Pb). This metal was well known to the ancients. Several lead mines in Great Britain were worked by the Romans, with whom the leaden waterpipes were common. Lead is of a bluish-white color, and is one of the softest of metals. Its ductility and tenacity are low in the scale, but it may be converted into tolerably thin sheets, as well as drawn into wire. It fuses at 325°, and may with difficulty be obtained

in cubic or octahedral crystals; sp. gr. 11.38. The lead of commerce is often nearly pure and can be obtained perfectly so by reduction of the pure nitrate. Metallic lead, exposed to the action of air and pure water, is powerfully corroded, and as a result the water is found to have dissolved the oxide of lead. The impurities of most waters modify this tendency by forming a thin film on the surface of the metal and so preventing any further oxidation. As a sanitary precaution, slate cisterns are greatly to be preferred to leaden ones. Lead enters into the composition of type-metal, pewter, Britannia metal, and plumbers' solder. The best tests for lead are hydric sulphide, which forms a black sulphide, and potassic chromate, which gives a yellow precipitate of lead chromate.

LEADVILLE, a city and county-seat of Lake co., Col.; on the Atchison, Topeka and Santa Fé, the Denver and Rio Grande, and the Colorado Midland railroads; 80 miles S. W. of Denver, the State capital. Leadville is one of the most important localities in the world for the mining and reduction of the ores of the precious metals, some of the mines being 700 feet deep. It is the mining, farming and grazing trade center for an extensive region; contains a court house, jail, hospital, and almshouse; has rich deposits of gold, silver and lead, large sampling, refining and reduction works, smelting furnaces, etc. The city is lighted by electricity and gas; has an excellent water supply, well organized fire and police departments, daily and weekly periodicals, National banks. Pop. (1910) 7,508; (1920) 4,959.

LEAF, in botany, a flat expansion divisible into two similar portions, often halves, by a vertical plane running through the apex and point of insertion. The under or outer surface generally differs from the upper or inner in color, structure, and in the nature and appendages of the epidermis. On the lower part of the stem or base of a shoot are the scale-leaves or phyllades; above these are the ordinary foliage leaves, and above these again, below the flowers, are the bracts. The foliage leaves are the chief organs of assimilation, and develop large quantities of chlorophyll, their form and appearance being very varied. The bracts are generally smaller. The foliage leaves and calyx and corolla leaves become transformed into stamens, and these modified into carpels. A leaf is called also a phyllome. A leaf consists of two parts, a stalk, called the petiole, and an expanded surface termed the blade or lamina. When the petiole is absent the leaf is said to be sessile.

LEAF, WALTER, an English scholar; born in 1852. After a brilliant career at Cambridge University, where he was Senior Classic, Chancellor's Medalist, and Fellow of Trinity, he entered mercantile life in 1877, retiring in 1892. A founder of London Chamber of Commerce, Chairman 1887; Pres. Hellenic Society 1914, and member of War Finance Committee same year. Litt.D. degrees from Oxford and Cambridge. Editor of the "Journal of Hellenic Studies," and published "The Story of Achilles" (1880), with J. H. Pratt; "The Iliad of Homer Translated Into English Prose" (1882), with A. Lang and E. Myers; "The Iliad" (1886–1888); "Companion to the Iliad" (1892); "Troy" (1912); "Homer and History" (1915), etc.

LEAGUE, a combination or union between two or more persons for the promotion of mutual or common interests, or for the execution of any design in common. Also a treaty, alliance, or confederation between two or more sovereigns or governments for mutual aid and defense. An offensive league or alliance is when two or more states agree to unite in attacking a common enemy; a defensive league is when the contracting parties agree to assist each other in their defense against a common enemy.

LEAGUE OF NATIONS. While this ideal has been in the mind of many modern thinkers on international law and while many statesmen have furthered the idea it first became a matter of practical statesmanship through the influence of President Wilson. In his famous address, Jan. 8, 1918, he gave as the last of his celebrated fourteen bases of the coming peace:—"A general association of nations must be formed under specific covenants for the purpose of affording mutual guarantees of political and territorial independencies for great and small states alike." Later in the year, at the Independence Day celebration at Mt. Vernon, the President said one of the ends to which the United States entered the war was: "The establishment of an organization of peace which shall make it certain that the combined power of free nations will check every invasion of right and serve to make peace and justice the more secure by affording a definite tribunal of opinion to which all must submit." Finally on Sept. 27, 1918, he again reiterated that the League of Nations would play an important part in the peace settlement, in fact he declared it to be an "indispensable instrumentality" if the coming peace settlement

were to be worth while. Five bases for the League he laid down in this address:

"First, the impartial justice meted out must involve no discrimination between those to whom we wish to be just and those to whom we do not wish to be just. It must be a justice that plays no favorites and knows no standard but the equal rights of the peoples concerned;

"Second, no special or separate interest of any single nation or any group of nations can be made the basis of any part of the settlement which is not consistent with the common interest of all;

"Third, there can be no leagues or alliances or special covenants and understandings within the general and common family of the League of Nations.

"Fourth, and more specifically, there can be no special, selfish economic combinations within the league and no employment of any form of economic boycott or exclusion except as the power of economic penalty by exclusion from the markets of the world may be vested in the League of Nations itself as a means of discipline and control;

"Fifth, all international agreements and treaties of every kind must be made known in their entirety to the rest of the world."

While the President thus put himself in the forefront of the movement to establish a League of Nations, he was not alone among the statesmen of the world in this position. Prominent among other leaders was General Smuts of the Union of South Africa whose draft of a league was actually made the basis of discussion in the negotiations at Paris. Viscount Grey and Lord Robert Cecil in England both pronounced in favor of the idea, the latter being appointed by the British Premier to have charge of the "League of Nations Department" of the British Government's staff at the Peace Conference. Premier Clemenceau exhibited no enthusiasm for the idea from the first, although Léon Bourgeois, a supporter of the League, was placed in charge of the matter at the Peace Conference.

After the President had arrived in Paris there was considerable discussion as to whether the terms of peace should not first be settled and then the covenant of the League of Nations be drafted. Most of the European statesmen took this view, but the President was obdurate in demanding that the first business of the Peace Conference should be the drafting of a constitution of a League of Nations. In this he carried his point and on Jan. 18, 1918, at the first session of the Conference it was announced that the first business would be the adoption of a covenant of a league. On Feb. 14, 1919, just before sailing for the United States to transact necessary business, the President read the Covenant of the League of Nations to the Peace Conference which adopted it.

The preamble is as follows:—"In order to promote international co-operation and to secure international peace and security by the acceptance of obligations not to resort to war, by the prescription of open, just and honorable relations between nations, by the firm establishment of the understandings of international law as the actual rule of conduct among governments, and by the maintenance of justice and scrupulous respect for all treaty obligations in the dealings of organized peoples with one another, the Powers signatory to this covenant adopt this Constitution of the League of Nations."

The document then establishes an Executive Council and a permanent Secretariat to be established at the seat of the League, provides for the arbitration of matters that are considered by the parties concerned to be proper subjects for arbitration, and also provides that nations shall not go to war without a previous resort to the arbitration of the League. In case of any assault by one of the members of the League against any other member all the nations signatory to the Covenant are to proceed by what means they choose to punish the offender. "Mandates" for the former German colonies are to be assigned by the executive council, and all treaties are to be deposited with the Secretary-General of the League. Perhaps the most important article in the Covenant and certainly the one most discussed was Article X which reads as follows:

"The high contracting parties shall undertake to respect and preserve as against external aggression the territorial integrity and existing political independence of all states members of the League. In case of any such aggression or in case of any threat or danger of such aggression the Executive Council shall advise upon the means by which the obligation shall be fulfilled."

This first draft of the Covenant encountered severe criticism especially in the United States, where many Senators held that a distinct recognition of the Monroe Doctrine should have been incorporated in the document: that the League would involve us in many petty wars and that it was placing the sovereignty over Americans in the hands of foreigners. The Japanese demanded an amendment in favor of racial equality, while the French wished a permanent

international force to protect them from German aggression. The opponents of the League under the leadership of Senator Lodge secured the signatures of thirty-nine of the Senate's members to a document declaring that they would not ratify the Covenant of the League in its present form. Influenced by these criticisms the President returned to Paris and changes were made in the wording of the Constitution of the League, intended to safeguard the Monroe Doctrine, to remove domestic questions from the jurisdiction of the League, to permit nations to withdraw from the League upon two years' notice "providing it had fulfilled its obligations," and to require the decision of the League Council to be unanimous.

This revised draft of the Covenant was adopted by a plenary session of the Peace Council on April 28, 1919, following an explanatory address by President Wilson. The decision was made that the seat of the League was to be Geneva, Switzerland, rather than Brussels which wished the honor. Sir (James) Eric Drummond, private secretary to Arthur J. Balfour, British Foreign Secretary, was named as the first Secretary-General of the League of Nations. Although many of the European statesmen desired the League of Nations Covenant to be entirely apart from the terms of the Peace Treaty, President Wilson again insisted that it be an integral part of the Treaty. This angered many members of the United States Senate who claimed that the President was attempting to force the Senate to agree to the Covenant whether it approved of its terms or not, the only alternative given it being that of rejecting the entire Peace Treaty and continuing in a state of war with Germany.

On July 10, 1919, President Wilson formally sent the Treaty with the Covenant embodied in it to the Senate for its ratification. By reason of the slight majority of the Republicans in that body they were able to organize the Foreign Relations Committee to which the document was referred. Both in the Committee and on the floor of the Senate serious opposition to both Treaty and League appeared and numerous requests were made by the Senators of the President for papers and reports of the Peace Conference. While the President refused most of these requests he finally agreed to meet the entire Foreign Relations Committee at the White House on August 19th and answer such questions as far as he could. The meeting was held and the Chief Executive made known his willingness to agree to such "interpretive reservations" which should not change in any essential manner the League or the Treaty, but he expressed opposition to any textual amendments or such reservations as would impair the structure of the League.

While these negotiations were proceeding between the executive and legislative branches of the Government of the United States, foreign countries were acting. Great Britain was the first of the great nations to ratify both the League and the Treaty, the resolution becoming law July 31, 1919. France followed by ratification on Aug. 20th, Belgium on Aug. 8th. Spain was among the first of the neutral states to declare their adhesion to the League, taking action to that effect on Aug. 16th. Switzerland agreed to submit the whole matter to a referendum of her people which was done and the League finally accepted, but not without considerable opposition. Chile was among the first of the American nations to join the League and the indications were that nearly all the South American nations would do so.

These proceedings of other nations did not influence the United States, the one country which was expected to hail the League as the achievement of its ideals. After an address by Senator Knox of Pennsylvania, Secretary of State under the Taft administration, in which he bitterly denounced both League and Treaty the Senate Foreign Relations Committee on Sept. 10, 1919, made their report recommending 38 textual amendments and four reservations to the Treaty and Covenant. As far as the League was concerned the Committee recommended an amendment giving the United States an equal vote with that of any other nation in the League. This was aimed at Great Britain, which nation had five votes counting those of her self-governing colonies. Another amendment would give to the United States the unconditional right of withdrawal from the League; a reservation was suggested by the Committee which would completely invalidate Article X; still another reservation made the United States sole judge of what was a domestic issue and over what matters the League had jurisdiction. President Wilson seeing the hopelessness of the situation in the Senate determined to appeal to the country in a series of speeches and endeavor to arouse public sentiment to bring pressure on the recalcitrant Senators. During September he journeyed to the Pacific Coast making speeches explaining and defending the League. While given a courteous hearing everywhere and an enthusiastic reception by most of his audiences, opinions differ as to whether the people

showed their sympathy with him in his battle for the League. Certainly the Senate was in no more pliant mood than hitherto. The President returned to Washington a sick man, and for a time in the fall was unable to take any further part in the controversy. The Senate during October abandoned its effort to amend the Covenant and the opposition centered its efforts on securing the adoption of reservations which should be as effective. These reservations, numbering fourteen and covering the main objections of the opposition to the League, were drawn up by the Foreign Relations Committee and were brought to a vote in the Senate on Nov. 19, 1919, and were defeated by a vote of 55 to 39, the Democrats and the "Irreconcilables" alike voting for their rejection, the first because the reservations as President Wilson had announced completely nullified the League, and the second group because they were opposed to ratification under any conditions. A vote was then taken on unconditional ratification which was defeated by a vote of 53 to 38, whereas an affirmative vote of two-thirds of the entire body was required to obtain a ratification. Even after this first rejection of the League negotiations continued to attempt to secure ratification. More sweeping reservations than the previous fourteen were agreed upon in order to secure the votes of the "Irreconcilables" if possible. The resolution of ratification with these fifteen reservations was brought to a vote on March 19, 1920, and received 57 votes in its favor to 37 against, thus lacking the necessary two-thirds by seven votes. The Senate, immediately thereafter passed a resolution notifying the President that they refused their consent to the Treaty and the League.

While the United States thus rejected the League, other nations at the same time were announcing their acceptance of it. By the first of January, 1920, Japan and Italy had ratified, thus completing the list of all the great powers on the allied side. Among the neutrals Spain, Argentina, Uruguay, Chile and Persia had responded favorably to the invitation given to join the League. By the terms of the Covenant the time for the League's first meeting had arrived, accordingly President Wilson issued a call for the session to be held in Paris on Jan. 16, 1920. This honor was accorded to the President of the United States because of his efforts for the League and in spite of the fact that his country had not ratified. On the 16th of January the League held its first meeting, there being present nine representatives of the different nations: Léon Bourgeois for France, Lord Curzon for Great Britain, Ambassador Matsui for Japan, M. da Conha for Brazil, Premier Venizelos for Greece, Ambassador de Leon for Spain, M. Hymans for Belgium, and Signor Ferrari for Italy. Sir Eric Drummond, the Secretary of the League, was also present. Most of the business which was before the body had been already transacted by the Supreme Council, so that comparatively few of the enormous tasks that were to be handled by the League were actually before it. Practically all the real business transacted was to name the English, Japanese, and Belgian members of the Sarre Basin Commission and to designate London as the next meeting place. This, in general, was the rule during the succeeding months. The real tasks and important decisions were handled by the Supreme Council of the Allies and only a perfunctory amount of business transacted by the League of Nations Council. Many thought more power and importance would be assigned to this latter body if the fall elections in the United States should return a Senate more favorable to the League. The Republicans, however, made an issue out of their opposition to the Covenant, and the great Republican victory eliminated any possibility of a ratification of the League Covenant.

The League held its second session in Geneva in November and December, 1920.

LEAMINGTON, a health resort of Warwickshire, England. It is wholly of modern growth, having become important only since the rediscovery of its mineral waters in 1784.

LEAR, EDWARD, an English author; born in London, England, May 12, 1812. In 1835 studied painting, and later was sent by the Earl of Derby to Italy and Greece, where he painted many landscapes in Albania, Athos, the Morea, and the islands of the Ægean. He exhibited at the Royal Academy 1850–1873. His later years were spent in Italy. Lear made himself better known by his illustrated books of travels than by his paintings. Of these the most important were his "Sketches of Rome and its Environs" (1842); "Illustrated Excursions in Italy" (1846); "Journal in Greece and Albania" (1851); "Journal of a Landscape Painter in Calabria" (1852); "In Corsica" (1869). The "Book of Nonsense" (1861). "More Nonsense Rhymes" followed in 1871, "Nonsense, Songs, Stories," and "Botany" in 1870, "Laughable Lyrics" in 1876. He died in San Remo, Italy, Jan. 30, 1888.

LEAR, KING, a legendary King of Britain, who in his old age divided his kingdom between Goneril and Regan, two of his daughters, who professed great love for him. These two daughters drove the old man mad by their unnatural conduct. Shakespeare made this story the subject of one of his plays.

LEASE, the contract establishing the relation between landlord and tenant.

LEASEHOLD, a dependent tenure derived either from a freehold or a copyhold, and held by lease. Schemes for the enfranchisement of leaseholds (allowing persons having long leases of small portions of land a right to purchase the fee-simple) concern mainly building leases.

LEATHER, the skins of animals chemically modified by tanning and otherwise, so as to arrest that proneness to decomposition which characterizes unprepared skins, and to give to the substance greatly increased strength, toughness, and pliancy, with insolubility and unalterability in water. Remains exist of tanned leather made in Egypt not less than 900 years B. C. There are three methods by which leather is prepared: first, and by far the most important, with tan barks and other vegetable substances containing tannin; second, by tawing with alum, bichromate of potash, and other mineral salts; and third, by shamoying or impregnating the raw skin with oil. The skins of all animals used for leather making consist chiefly of a fibrous gelatigenous substance called collagen, which on being boiled forms the ordinary gelatin of commerce, with an interfibrous compound called coriin, insoluble in water, but which in common with collagen unites with tannin to form the insoluble and unalterable compound tanno-gelatin, the chemical basis of tanned leather.

The skins of all animals may be made into leather; but in practice the raw materials of the manufacturer consist of the skins of certain animals which are reared and slaughtered primarily for other purposes, and of which the supply is sufficiently large to form the basis of a great industry. Large skins, it may be remarked, such as those of oxen and horses, are in trade termed hides; those of calves, sheep, goats, and other smaller creatures are called skins. Of all leather-making hides the most important are those of oxen, which are primarily distinguished as ox, cow, and bull hides, and calf skins. Leading sources of supply are Australia, the Cape of Good Hope, the River Plata and South America generally, and China and Japan. From the East Indies there come vast quantities of small hides termed kips, both salted and tanned. Buffalo hides are imported in large quantities from Singapore, Batavia, Bombay, Kurrachee, and Calcutta. Horse hides are brought in considerable quantities from South America. Sheep skins, from the vast quantities yearly available in nearly all parts of the world, are a most important source of leather. Goat skins and kid skins come from the Cape, the East Indies, Asia Minor, and Switzerland; but many of the East Indian and Asiatic skins are when imported already tanned, and require only dressing. Other skins which have only a local or a limited market are the walrus, rhinoceros, and elephant, from which leather of great thickness, suitable for polishing wheels and other mechanical purposes is obtained; and hog or pig skin is an important source of leather for saddle making and other purposes. The skins of various species of deer and antelope, porpoise and kangaroo, are also sources of leather; and from the Cape there are occasionally sent to the London market skins of the gnu and quagga. As sources of leather for fancy articles there may be mentioned the alligator (a leather now extensively imitated), and certain snakes' and sharks' skins.

Tanning.—The operations of tanning and the duration of the process vary very widely. Oak tannage is a very tedious process, and the common practice is now to hasten the completion of the operation by mixed tannage, in which more rapidly acting agents play a part. In the United States hemlock bark from *Abies canadensis* is the most important tanning material; and the mimosa or wattle barks of Australia are very largely used in the British colonies as well as in Great Britain. Standard extracts containing a fixed percentage of tannin have also come into favor for rapid tannage. But, with all the devices which have been suggested, tanning is essentially a slow operation. The great amount of poor leather in the markets is due to hurried preparation and use of chemicals that injure the texture.

In the treatment of ox hides for the production of, say, sole leather, the first object of the tanner is to clean and soften the hide. This is done by washing with water, and if necessary working the hide under stocks till the whole is uniformly soft and pliant. The unhairing and removal of the scarf skin is the next operation, for which in English tanneries the hides are steeped in pits containing lime water, while in the United States the

plan adopted consists of sweating the hides, or artificially heating them till incipient putrefactive fermentation is set up. The hides are afterward stretched over a tanners' beam, and the hair and scarf skin are removed by shaving with a fleshing knife. At the same time the flesh side is gone over, and any fragments of fiber or fat adhering to it are pared away. All traces of lime in the hides must be got rid of, and that sometimes is effected in the first tan pit, containing acid liquors weak in tannin, and sometimes by "bating" in "pure"—which is a warm decoction of pigeons' or other fowls' dung. The method of actual tanning varies endlessly, but in general it may be said to consist in suspending or depositing in layers the hides in a successive series of pits containing tan liquor or ooze which is weak at first, but which as the tanning proceeds is made increasingly rich in tannin. To finish the hides they are damped and softened in water, scoured to remove the bloom from their surface, then liberally oiled and the whole surface worked over by pressure with a three-sided steel implement called a striking pin. This operation removes all creases and smooths out and solidifies the leather—an operation carried further and finished after renewed oiling, by rolling the hide on a smooth floor under a heavy hand roller. Morocco leather is a term which now applies rather to the finish of a certain class of goods than to the source of the skin of which it is formed. It is a richly grained and dyed leather, originally and properly made from goat skins tanned in sumach. Sheepskins roughly tanned and undressed are termed basils; dressed and dyed as for morocco, but finished smooth, they form roans; and split sheep skins (the flesh sides of which go to be shamoyed to form wash leather) tanned and dressed are known as skivers. Russia leather is now any smooth finished thin leather, impregnated with the empyreumatic oil of birch bark, which gives the substance its peculiar odor and insect resisting qualities. Originally it was made in Russia of dressed calf skins.

Tawing.—Tawing consists in dressing skins with certain mineral salts, and is useful principally for glove leathers and the so-called kid leather employed for the uppers of ladies' boots. It is also by tawing that furriers' skins are prepared, and hides and skins in the hair generally preserved.

Shamoying.—This consists simply in impregnating and saturating skins with oil. The name is derived from the fact that the process was originally applied for the preparation of the skins of the Alpine chamois. Shamoy leather now consists principally of the flesh splits of sheep skins. The oil is worked by means of stock slowly into the interstices of the skin and there becomes oxidized, forming a kind of combination with the gelatinous constituents, and yielding a peculiarly soft and spongy texture.

LEAVENWORTH, a city and county-seat of Leavenworth co., Kan., on the Missouri river and the Atchison, Topeka and Santa Fé, the Burlington Route, the Chicago, Rock Island and Pacific and several other railroads; 26 miles N. W. of Kansas City. It is the trade center for a farming and coal mining region; manufactures flour, syrup, glucose, stoves, machinery, bricks, castings, carriages, wagons, boots and shoes, metallic wares, iron bridges, furniture, cigars, and brooms. It contains Mount St. Mary's Academy, Cushing and St. John's Hospitals, Kansas State Orphan Asylum, Whittier Library, Kansas State and United States penitentiaries; and has electric light and street railroad plants; excellent water supply; the pro-cathedral of the Immaculate Conception; many churches; National and savings banks; daily, weekly, and monthly periodicals. Adjoining the city on the N. is Fort Leavenworth, where are located an infantry and cavalry school, and a National cemetery. Pop. (1910) 19,363; (1920) 16,912.

LEBANON, a city of Indiana, the county seat of Boone co. It is on the Cleveland, Cincinnati, Chicago and St. Louis and the Central Indiana railroads. Its industries include saw mills, chair factories, a condensed-milk factory, grain elevators, etc. Pop. (1910) 5,474; (1920) 6,257.

LEBANON, a city of Pennsylvania, the county-seat of Lebanon co. It is on the Philadelphia and Reading, the Cornwall, and the Cornwall and Lebanon railroads. In the vicinity are important deposits of brownstone, limestone, and brick clay. There are important iron mines in the neighborhood. The chief industries are iron mining, quarrying, brickmaking, and the manufacture of silk, bolts and nuts, boilers, etc. It has four libraries, a court house, and other public buildings. Pop. (1910) 19,240; (1920) 24,643.

LEBANON, a mountain range in Syria. The word Lebanon is derived from a Semitic root meaning "white"; and this name is given to the mountains, because of the whitish color of their rocks. The mountains belong geologically to the Cretaceous system, and

consist principally of limestones and chalks. They are divided into two parallel ranges, the Lebanon on the W. and the Anti-Lebanon (or more correctly Anti-Libanus) on the E. Between them lies the deep valley of the Bukâ (the ancient Cœle-Syria), which is from 4 to 6 miles wide, and is watered by the rivers Litany and El-Asi (the ancient Orontes). The former flows S. W., then turning abruptly to the W., reaches the sea a little N. of Tyre; while the latter flows in the opposite direction, and after crossing the plains of Hamath likewise turns to the W. to the Mediterranean. The highest summits occur in the N. in both ranges, but are higher in Lebanon than in Anti-Lebanon; in the former they vary from 10,018 (El-Kazib) to 7,000 feet and less, and in the latter are about 8,000 or 9,000 feet. In both ranges the E. versant is the steeper and sterner. The W. slopes of Lebanon are broken by numerous deep transverse valleys, running between the spurs that the main chain sends down to the very edge of the sea, where they often terminate in bold headlands. The W. slopes of Anti-Lebanon are more barren and more broken by crags and bare rocks. The valleys and the lower slopes of the hills are generally verdant with vegetation. The vine is extensively grown, and wine is made, but is all consumed at home. Mulberry trees figure prominently; for the manufacture of silk is one of the most important industries of the mountaineers. Olive groves and orchards (nuts and figs) abound everywhere. The higher slopes are in many districts covered with forests of oak, cypress, pine, plane, etc. Contrary to the current belief, remains of the great cedar forests of Solomon's time exist in more places than the single grove of 377 trees at the head of Kedisha valley. Tobacco, wheat, barley, and millet are the chief crops cultivated. Owing to the elevated situation, the climate is healthful and bracing. Streams of clear water are numerous. The inhabitants number in all about 400,000; 230,000 Maronites, 50,000 Druses, and 30,000 Moslems, and a few converts of the American Protestant and the Roman Catholic missionaries of Beyrout. After the bloody quarrels of the Druses and Maronites in 1860, the district of Lebanon was separated (1861) from the Turkish pashalik of Syria, and put under a Christian governor, the European powers constituting themselves the "guardians" of the new province.

LEBANON VALLEY COLLEGE, an educational institution in Annville, Pa.; founded in 1866 under the auspices of the Union Brethren; reported at the close of 1919: Professors and instructors, 25; students, 311; president, Rev. G. D. Gossard.

LEBRUN, CHARLES FRANÇOIS, a French administrator; born in St. Sauveur-Landelin, France, March 19, 1739. He came at an early age to Paris; and was nominated deputy to the states-general in 1789. In 1795 he was elected to the council of elders, and became president in 1796. He was appointed third consul in December, 1799; nominated arch-treasurer of the empire in 1804; and in 1805 governor-general of Liguria and Duke of Placentia. Having signed the constitution that recalled the house of Bourbon to the throne, he was created a peer of France by the king, and became president of the first bureau of the Chamber of Peers. After the return of Napoleon he accepted the peerage from him, and likewise the place of grand master of the university, which rendered him incapable of sitting in the new Chamber of Peers, formed in August, 1815. In the early part of his life he translated the "Iliad" and "Odyssey," and Tasso's "Jerusalem." He died near Dourdan, France, June 16, 1824.

LE BRUN, MARIE, a French painter; born in Paris, France, April 16, 1755. She was a daughter of one Vigée, a painter, and in 1776 married J. B. P. Le Brun, a picture dealer. Her great beauty, as well as the charm of her painting, speedily made her the fashion in Paris and at Versailles. Her first portrait of Marie Antoinette (in 1779) led to a lasting friendship. She subsequently painted numerous portraits of various members of the royal family, and in 1783 was admitted, after much opposition on account of her sex, a member of the Royal Academy of Painting. She left Paris for Italy at the outbreak of the Revolution in 1789, and after a species of triumphal progress through Europe, arrived in London in 1802. There she painted portraits of the Prince of Wales, Lord Byron, and other celebrities. In 1805 she returned to Paris, where she lived till her death, March 30, 1842.

LE CATEAU, formerly Cateau-Cambrésis: a town of France, in the Nord department, 14 miles S. E. of Cambrai. Has a town hall belonging to Renaissance period, and manufactures include machinery and textiles. The town figured prominently in the fighting of 1918, where Rawlinson's Third Army fought stubbornly. The town changed hands repeatedly. Pop. about 10,000.

LE CATELET, a village in France, S. E. of Cambrai, on the line leading from Cambrai to St. Quentin. It was part of the British and French support line that went through the villages of Namoy and Derain opposite the Hindenburg line in the World War. It fell before the Germans in the spring drive of 1918.

LECH (le*h*), a right-hand tributary of the Danube, rising in the Alps in Vorarlberg, flowing N. past Augsburg, and after a course of 177 miles joining the Danube a few miles E. of Donauwörth. It is a mountain stream and not navigable. Near Rain, not far from its mouth the imperialist general Tilly was defeated and killed, April 5, 1632, by the Swedes under Gustavus Adolphus.

LECKY, WILLIAM EDWARD HARTPOLE, an Irish historian; born near Dublin, Ireland, March 26, 1838. He was educated at Trinity College where he graduated B. A. in 1859, and M. A. in 1863. In 1861 he had published anonymously "The Leaders of Public Opinion in Ireland," four brilliant essays on Swift, Flood, Grattan, and O'Connell. Later works were "History of the Rise and Influence of the Spirit of Rationalism in Europe" (2 vols. 1865); "History of European Morals from Augustus to Charlemagne" (2 vols. 1869); and "History of England in the Eighteenth Century" (8 vols. 1878–1890). Later appeared "Democracy and Liberty." He declared strongly against Home Rule. He died in London, Oct. 22, 1903.

LECONTE DE LISLE, CHARLES MARIE RENÉ (le-kôn*gt*′duh lēl′), a French poet; born in the Isle of Bourbon (Réunion), Oct. 23, 1818. Settling in Paris (1846), he was at first an enthusiastic socialist and disciple of Fourier; afterward an impassioned admirer of the ancient religions of Greece and India. In his "Antique Poems" (1853), he sings the praises of the ancient gods and heroes; in his "Barbarian Poems" (1862), with a poet's insight he seeks to interpret the mythological ideas of the Hebrews, Irish, etc. His "Tragic Poems" (1882), were crowned by the French Academy. He made admirable translations of ancient Grecian poets. He died in Louveciennes, near Paris, July 17, 1894.

LE CONTE, JOSEPH, an American scientist; born in Liberty co., Ga., Feb. 26, 1823. He practiced medicine for several years at Macon, Ga., but in 1850 went to Cambridge, Mass., where he studied natural history under Agassiz. He subsequently held several professorships, and after 1869 occupied the chair of geology and natural history in the University of California. "The Mutual Relations of Religion and Science" appeared in 1874, and was followed by "Elements of Geology," "Light," "A Compend of Geology," "Evolution and Its Relation to Religious Thought." He died in the Yosemite Valley, California, July 6, 1901.

LECOUVREUR, ADRIENNE (luh-kö-vrur′), a French actress; born near Châlons, France, April 5, 1692, made her début at Strasburg in 1717, and soon became famous for her power as an actress, and the number and eminence of her admirers, among whom were Marshal Saxe, Voltaire, and Lord Peterborough. Her death, in Paris, March 20, 1730, was unjustly suspected to be due to poison administered by a rival, the Duchess Bouillon. This is the plot of the play by Scribe and Legouvé, in which Rachel, Bernhardt, etc., won distinction.

LEDOCHOWSKI, COUNT WLADIMIR HALKA, General of Society of Jesus. He was born in 1866 at Loosdorf, Lower Austria, and was educated at the Theresianum, Vienna. He studied law at the Cracovian University, 1885, and philosophy and theology in the Seminary at Tarnov, and at the Gregorian University in Rome, 1885-1889. He entered the Novitiate of the Galician Province of the Jesuit Society, 1889, was ordained priest 1894; and after a short period of literary and pastoral activity, was nominated Provincial of the Galician Province 1901. In 1906 he became assistant of the German Assistancy and in 1915 General.

LEDRU-ROLLIN, ALEXANDRE AUGUSTE (luh-drü-rō-la*ng*′), a French agitator; born near Paris, France, Feb. 2, 1807. Admitted to the bar in 1830, he made a name as defender of Republican journalists and subsequently obtained a great reputation as a democratic agitator and leader of the workingmen's party. He was elected in 1841 deputy for Le Mans. On the outbreak of the revolution of 1848 he became a member of the provisional government, as minister of the interior, and in May was elected one of the five in whose hands the Constituent Assembly placed the interim government. But he offended his supporters, by his injudicious conduct, and resigned. He next ventured on a candidature for the presidency against Louis Napoleon in December, but was ignominiously beaten. An unsuccessful attempt to provoke an insurrection against his fortunate rival put an end to his political activity. For the next 20 years he lived alternately in London and

Brussels, only being amnestied in 1870. After his return to France he was elected to the Assembly in 1871, and again in 1874. He died in Fontenay, France, Dec. 31, 1874.

LEE, ALGERNON, an American journalist, born in Dubuque, Ia., in 1873. He was educated at the University of Minnesota. He became identified with the Socialist movement in 1895, and edited Socialist papers from 1898 to 1909. From the latter year he was educational director of the Rand School of Social Science, in New York. He was a delegate to many Socialist conventions and conferences.

LEE, ANN, founder of the Society of Shakers in America; born in Manchester, England, Feb. 29, 1736. She was poor and uneducated, and in 1758 joined the Shakers, a sect allied in their belief to the Friends. They practiced curious dances in which the whole body was shaken and thrown into strange postures. Anna Lee was married in 1762 to a blacksmith named Standerin, or Stanley. She believed herself inspired, and was imprisoned in 1770 for preaching the new doctrine of celibacy. In 1774 she emigrated to America and founded the Society of Shakers. She was greatly revered by her followers, and by them was called "Mother Ann." She died in Watervliet, N. Y., Sept. 8, 1784.

LEE, CHARLES, an American military officer; born in Dernhall, Cheshire, England, in 1731. In 1775 he was made Major-General. He was captured by the British in 1776, and was exchanged in 1778. For disobedience of the orders of Washington at the battle of Monmouth in 1778, he was tried by court-martial and sentenced to one year's suspension from the army, and afterward was altogether dismissed by Congress. He died at Philadelphia, Pa., Oct. 2, 1782.

LEE, FITZHUGH, an American military officer; born in Clermont, Fairfax co., Va., Nov. 19, 1835. He was graduated at the United States Military Academy in 1856. At the outbreak of the Civil War he resigned his commission and entered the Confederate Army, rising through its grades to that of Major-General. He participated in all the battles of the Army of Northern Virginia, and was severely wounded at Winchester in 1864. He commanded a cavalry corps of the Army of Northern Virginia in 1865, surrendering to General Meade in March. He was governor of Virginia from 1886 to 1890. Appointed consul-general at Havana in 1893 he served there till 1898, and was at the head of affairs in Cuba during the period immediately preceding the outbreak of the war with Spain. President McKinley having intended to send an additional message to Congress on April 6, 1898, the effect of which would have been an immediate outbreak of hostilities, Consul-General Lee cabled that he would not be able to secure the removal of American citizens from Cuba before the night of the 9th. The President thereupon withheld his message, and on the appointed evening the Americans in Cuba who wished to leave were all conveyed from the island. During the ensuing war with Spain he was a Major-General of volunteers, serving in Cuba, and becoming at the close of hostilities military governor of Havana. In 1900 he was made commander of the Department of the Missouri. He died April 28, 1905.

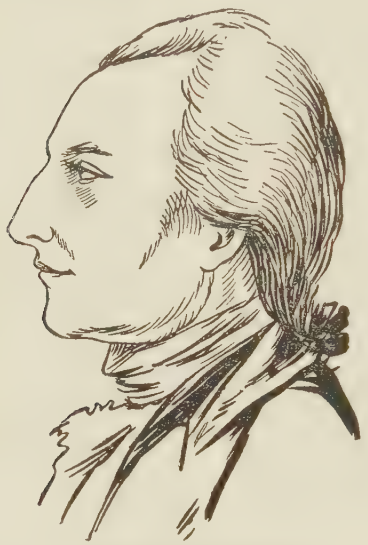
LEE, FRANCIS LIGHTFOOT, a signer of the Declaration of Independence and a brother of Richard Henry Lee; born in Stratford, Va., Oct. 14, 1734. He died in Richmond, Va., April 3, 1797.

LEE, GERALD STANLEY, an American author, born in Brockton, Mass., in 1862. He graduated from Middlebury College in 1885, and for three years following studied at the Yale Divinity School. He was ordained to the Congregational ministry in 1888 and was pastor of several churches in various parts of the country. He lectured widely on literature and art subjects. His published writings include "The Shadow Christ" (1896); "The Lost Art of Reading" (1902); "The Voice of the Machines" (1906); "The Lonely Nation" (1917); and "The Ghost in the White House" (1920).

LEE, HENRY, an American soldier; born in Leesylvania, Va., Jan. 29, 1756. He was graduated at Princeton College in 1774, and on the outbreak of the Revolutionary War joined Washington's army. He speedily won distinction for his dash and daring, being styled "Light-horse Harry Lee." He led the army of 15,000 men that put down the "whiskey insurrection" in Pennsylvania in 1794. He first uttered the words, "First in war, first in peace, first in the hearts of his countrymen," applying them to Washington, whose commemorative oration he delivered. He died on Cumberland Island, Ga., March 25, 1818.

LEE, JENNETTE (BARBOUR PERRY), an American novelist, born in Bristol, Conn., in 1860. She graduated from Smith College in 1886. From 1890 to 1893 she taught English at Vas-

sar College, and from 1893 to 1896 she was head of the department of English, in the College for Women, at the Western Reserve University. From 1904 to 1913 she was professor of English language and literature at Smith College. In 1896 she married Gerald Stanley Lee. Her novels include "Kate Wetherill" (1900); "Happy Island" (1910); "Unfinished Portraits" (1916); "The Air-Man and the Tramp" (1918); "The Rain-Coat Girl" (1919).



RICHARD HENRY LEE

LEE, RICHARD HENRY, an American statesman; born in Stratford, Westmoreland co., Va., Jan. 20, 1732. He received part of his education in England, and after his return to his native country was chosen a delegate to the House of Burgesses from Westmoreland county. In the opposition to unjust British claims he played throughout a most important part. A delegate from Virginia to the first American Congress at Philadelphia (1774) he was at once recognized as a leader in that assembly. He drew up many addresses to the king and the English people. When war became inevitable Lee was placed on the various committees appointed to organize resistance. On June 7, 1776, he introduced the motion finally breaking political connection with Great Britain. In 1784 he was unanimously elected president of the Congress, and when the Federal Constitution was established he entered the Senate for his native State. In 1792 he retired into private life. He died in Chantilly, Va., June 19, 1794.

LEE, ROBERT EDWARD, an American military officer; born in Stratford House, Westmoreland co., Va., Jan. 19, 1807. He was graduated at United States Military Academy in 1829, and entered the United States army as 2d lieutenant, becoming 1st lieutenant in 1836, and captain two years later. In 1846 Lee was appointed engineer-in-chief to the United States army in Mexico; was brevetted major in April of that year for "gallant conduct at the battle of Cerro Gordo"; lieutenant-colonel in August, 1847, for distinguished bravery in the actions of Contreras and Churubusco; and colonel (Sept. 13, 1847), for eminent services at Chapultepec. After the close of the war Colonel Lee was reappointed a member of the United States Board of Engineers, and in 1852 was made superintendent of West Point Military Academy, which he held till March, 1855, when he was appointed lieutenant-colonel of cavalry. In 1861 he received his colonelcy, but resigned his commission within a month afterward, and offered his sword to his native State, Virginia, which had just seceded from the Union, and was then threatened by the National forces. His offer being promptly accepted, Colonel Lee was appointed commander-in-chief of the Virginia troops, with the rank of general in

GENERAL ROBERT E. LEE

the Confederate army. He occupied himself with organizing his troops till May, 1862, when he superseded Gen. J. E. Johnston in the command of the army intrusted with the defense of Richmond, threatened by a formidable Union army

under General McClellan. In the sanguinary campaign that ensued, General Lee, aided by "Stonewall" Jackson, made a vigorous assault on McClellan's army, and succeeded, in a series of severe battles, known as the "Seven Days' Battles," in forcing it back from its position in front of Richmond. In August, of the same year, General Lee forced the Union army under General Pope to fall precipitately back upon Washington. The campaigns he conducted in Maryland and Pennsylvania in 1862–1863 were, however, not so fortunate. After fighting a hotly-contested and drawn battle at Antietam, Sept. 17, 1862, Lee was obliged to retreat across the Potomac; and, though victorious in the first day's battle at Gettysburg (July 1, 1863), he met with a disastrous repulse two days afterward, and was again compelled to retire across the Potomac. Previous to this, however, General Lee had signally defeated General Burnside's army at Fredericksburg, Dec. 12–16, 1862, and also defeated General Hooker at Chancellorsville, May 1–4, 1863. From August, 1863, till May, 1864, General Lee was engaged in operations along the line of the Rappahannock, and fought a succession of desperate battles in the Wilderness, and from there S. to his old position before Richmond, during May, 1864. On Feb. 5, 1865, General Lee was appointed commander-in-chief of all the Confederate armies in the field, and till April in that year held the defenses of Petersburg and Richmond, fighting several battles to retain them. On April 2 he was at last dislodged from his intrenchments by superior forces, compelled to retreat from Petersburg, and eventually to surrender himself and army to General Grant, April 9, after a long and gallant contest with his resolute and able adversary. General Lee was installed president of Washington College, Va., Oct. 2, 1865. He died in Lexington, Va., Oct. 12, 1870.

LEE, SIR SIDNEY, an English scholar and writer, born in London, in 1859. He was educated at Balliol College, Oxford, and became in 1883 assistant editor of the "Dictionary of National Biography," and on the death of Sir Leslie Stephen, he was appointed successor. To this work he contributed about 800 articles. He lectured at Oxford and Cambridge, and in 1903 at the Lowell Institute of Boston. In 1913 he was appointed professor of English language and literature in the University of London. He was considered an authority on matters relating to Shakespeare, and wrote much on that subject. His "Life of Shakespeare" is considered to be the final authority. It was published in 1898. He wrote "A Life of Queen Victoria"; "Great Englishmen of the Sixteenth Century" (1904); "Shakespeare and the Modern Stage" (1906); "The French Renaissance in England" (1910).

LEE, STEPHEN DILL, an American military officer; born in Charleston, S. C., Sept. 22, 1833. He was graduated at United States Military Academy in 1854. He served in the army till 1861, when he resigned to enter the Confederate service, rising through its military grades to that of Lieutenant-General. He fought gallantly in the battles around Richmond, at the second Bull Run, and other engagements. After the Civil War he was prominent in organizations of Confederate veterans. In 1899 he became commander of the Vicksburg National Park. He died in 1908.

LEECH, any individual of the suctorial order *Hirudinea*, of which the best known examples are the horseleech and the medicinal lech, under which name two species are commonly employed: *H. medicinalis*, chiefly imported from Germany, Bohemia, and Russia; and the Hungarian leech (*H. officinalis*). Greenish-olive to dark green. The body is composed of from 90 to 100 rings, and furnished with a discal and caudal sucker. The anterior sucker is small, the mouth furnished with three semicircular toothed jaws meeting in a point. They are not fit for medical purposes before the age of 12 or 18 months. They inhabit pools and marshy places; and in the S. of France they are bred in large marshes chiefly for the continental market. Leeches are employed for the local extraction of blood.

LEECH, JOHN, an English artist and humorist; born in London, England, Aug. 29, 1817. He was educated at the Charterhouse School. He studied at St. Bartholomew's Hospital, but forsook medicine to draw on wood. His first important work was illustrations to the "Ingoldsby Legends." In 1841 he joined the staff of "Punch." For that periodical he worked with pre-eminent success, supplying weekly political satires and pictures of all phases of English life. His designs for "Punch" have nearly all been republished as "Pictures of Life and Character," and as "Pencillings from Punch." He also executed the illustrations for "Mr. Sponge's Sporting Tour," "The Comic History of England," and other books. He died suddenly in London, Oct. 29, 1864.

LEE-CHEE. See LITCHI.

LEEDS, a manufacturing town of England, in Yorkshire, on the river Aire, which here becomes navigable and is crossed by eight bridges. The Leeds and Liverpool Canal communicates with the Aire, which again gives water communication with Hull, etc. The town extends for about 7½ miles from E. to W. and about 7 from N. to S. Among the most conspicuous of the public buildings is the town hall, a massive stone building of the Corinthian order, considered one of the finest municipal buildings in the kingdom. The chief educational institution is the Yorkshire College for science, technology, and medicine, affiliated to the Victoria University, Manchester. Leeds possesses a public park of 300 acres. Leeds has been for generations the chief seat of the woolen manufacture of Yorkshire. In the wholesale clothing trade several thousand hands are employed, as also in steel works, iron foundries, rolling mills, tool and machine factories. The boot and shoe factories, the leather trade, and the cloth-cap trade also employ large numbers of men and women, and there are extensive color printing works, tobacco manufactories, chemical and glass works, works for making drainage pipes, fire-bricks, terra cotta, pottery, etc. Nearly 100 collieries are worked in the district. The history of Leeds extends over more than 1,200 years, the town being mentioned under the name of Loid or Loidis by the Venerable Bede as the capital of a small British kingdom about 616. In the neighborhood is the fine ruin of Kirkstall Abbey. Pop. (1917) 417,051.

LEEUWARDEN (lā′vär-den), capital of the Dutch province of Friesland, on the Harlingen and Groningen Canal, 113 miles from Utrecht. It contains handsome law courts and town hall, has an ancient palace of the Prince of Orange, a library with valuable archives, and 12 churches. Linen fabrics, mirrors, pianofortes, and wagons are manufactured. Leeuwarden is one of the largest fruit and cattle markets in Holland, and does considerable trade in agricultural produce, groceries, wine, and brandy. In the 13th century it was situated on an arm of the sea, which subsequently sanded up. Pop. about 34,000.

LEEUWIN, CAPE (lā′vin), the S. W. corner of Australia, notable on account of the tempestuous weather usually encountered there.

LEEWARD ISLANDS, the W. section of the Lesser Antilles (so called in distinction from the Windward Islands with reference to the trade winds). Of the whole group Guadalupe, Martinique, St. Bartholomew, and part of St. Martin belong to France; St. Eustatius, Saba, and part of St. Martin to Holland; and the Virgin Islands to the United States. Those which belong to Great Britain were grouped together in one federal colony in 1871, and consist of the five presidencies of Antigua (with Barbuda and Redonda), Montserrat, St. Kitts and Nevis (with Anguilla), Dominica, and the Virgin Islands. The Leeward Islands confederation has representative government, with a governor, executive, and Federal Legislative Council, though each presidency possesses its own constitution. The capital and seat of government of the Leeward Islands is St. John, Antigua. The chief products are sugar and molasses.

LE FANU, JOSEPH SHERIDAN (luh fänü′ or lef′a-nū), an Irish journalist and novelist; born in Dublin, Ireland, Aug. 28, 1814. Having graduated from Trinity College, Dublin, he joined (1837) the staff of the "Dublin University Magazine," becoming editor and proprietor. He first won fame with the Irish ballads, "Phaudbrig Croohore" and "Shamus O'Brien." Among modern Irish novelists he stands next in popularity to Charles Lever. "The House by the Churchyard" (1863); "Uncle Silas" (1864); "Guy Deverell" (1865); "The Tenants of Malory" (1867); "The Wyvern Mystery" (1869); "In a Glass Darkly" (1872). He died in Dublin, Feb. 7, 1873.

LEGACY, anything which is handed or passed down from an ancestor or predecessor.

LEGAL EDUCATION, education for the practice of the law. It takes on two chief forms: education in the office of an established practitioner; and education in a law school. The first method is by far the older, and is still continued; the second is rapidly coming to prevail, and is greatly superior. The first is largely the method of the apprentice; and is subject to the disadvantages of disorderliness in form, narrowness in content, and superficiality in result. The second represents real educational conditions, ways, means, and results. Of the first and earlier method little need be said: the present article is devoted to the second method,—legal education through the law school.

In point of time the earliest American law school was established in the little, historic town of Litchfield, Connecticut, in the historic year of 1784. Its founder was the able lawyer and outstanding jurist of his time, Tapping Reeve. It maintained a high record for thirty-five

years, and educated about thirty men each year.

The second school was established in 1817, at Harvard University; and in its integral association with a university represents the method generally obtaining in making a law school a part of a university foundation. The more famous of the schools, subsequently founded, are that of Yale in 1843, that of the University of Pennsylvania in 1852, and, in or about 1859, the three schools of the University of Michigan, of Columbia University, and of Northwestern University (originally founded as the Union Law School of Chicago), and, in or about 1892, the schools of Western Reserve University and of the University of Chicago. From year to year the State Universities have established schools. There are now registered in the Reports of the United States Commissioner of Education one hundred and twenty-four schools, with an annual attendance of 22,880 students. These figures are based on statistics given in the report of the United States Commissioner of Education, issued 1917. Figures in the latest report, 1918, affected by war conditions, were a little over one-half the previous year. One hundred law schools in the United States reported an attendance of 10,998 men and 820 women, making a total of 11,818 students for 1917-1918.

Admission to the schools represents a wide variety of standards. In a few schools evidence of the possession of a good moral character is the chief condition. In the better schools graduation from a good high school is required. In a few schools—and as a consequent generally regarded as the best—either two, or three, or four, years of study in a college of liberal learning, are requisite for admission. The present tendency is toward an increase in the requirements.

The course of study in the schools, usually covering three years, includes such fundamental and primary subjects as contracts, criminal law, torts, property, agency, equity, evidence, insurance, public utilities, trusts, damages, law of persons, conflict of laws, constitutional law, corporations, partnerships, bankruptcy, quasi-contracts, jurisprudence, administrative law, history of the common law, patent law, and professional ethics. In certain schools, as Harvard, the special laws or procedure in several of the individual commonwealths is considered. The variety of subjects of the course of study increases, as laws increase in number, and as society becomes more complex.

The profession of the law is a practical profession. Those who enter upon the study of it as a science, do so in order to use it as an art. They learn law in order to practice it. But the right to practice it, the individual State or Commonwealth controls within its own territory. The standards which the different States set up for the exercise of this right manifest a variety from the "possessing of a good moral character" to the passing of a hard and prolonged examination in the science of the law itself. Such an examination is commonly, and to a certain degree always in the charge of either the Supreme Court or the Bar Association of the State.

Of the great names in the history of the law schools in the last half-century the name of Christopher Columbus Longdell is the most illustrious. Called from the New York bar to the Harvard Law School in 1870 by President Eliot—in the early years of his great executive career—Longdell inaugurated what has since become known as the case system of teaching and of learning law. The case system represents the study of the law from cases, or decisions, as reported in the official records of the courts. It is the inductive system. It reaches general principles from specific instances or facts. The previous method was rather deductive, beginning with general principles. It might also be called the laboratory method. It has obtained wide currency. It has been subjected to certain changes; but the essential elements of the system are still maintained both at Harvard and other leading schools.

As has been said, legal education prepares for a practical profession. The schools have neither made nor sought to make, as a rule, jurists. The philosophical aspects of the science have made only a slight appeal to students. Perhaps the nearer approach to the philosophical relationship lies in the courses on the constitution of the United States—courses which the best schools give. Research occupies a very insignificant place in the legal curriculum; but many teachers do recognize that the opportunity for the philosophic study of the law is commanding or even obligatory.

At the present time the public influence of the study of the law and of the members of the profession is of peculiar interest. In the political judgments lawyers as a class are conservative. They recognize the rights of persons and of property, inherited from a long historic tradition. By comparative reasoning they also recognize the duties which both persons and property represent. In a time, therefore, of social stress and storm, of radicalism in thought, speech and act, they can be relied upon as

stabilizing forces which will help to hold together the constituent elements of the community of the state. In his great work, "Democracy in America," De Tocqueville pointed out the fact that the legal profession was a counterpoise to the radicalism of democracy. In conserving such results the American system of legal education, therefore, occupies the highest place.

Legal education, as conducted in the law school, represents one of the most important contributions made by America to modern civilization. Such a recognition is commonly accredited to it throughout the English-speaking world.

LE GALLIENNE, RICHARD, an English author; born in Liverpool, England, Jan. 20, 1866. He was educated at Liverpool College. He served articles to a firm of chartered accountants for seven years; abandoned business for literature, and become literary critic for the "Star." He published "Volumes in Folio" (1888); "George Meredith" (1890); "The Book-Bills of Narcissus" (1891); "English Poems" (1892); "The Religion of a Literary Man" (1893); "Prose Fancies" (1894); "Robert Louis Stevenson and other Poems" (1895); "Retrospective Reviews" (1896); "The Quest of the Golden Girl" (1896); "If I were God" (1897). He edited "The Compleat Angler," and a verse translation of Omar Khayyam. "The Romance of Zion Chapel" (1898); "Little Dinners with the Sphinx" (1909); "Vanishing Roads" (1915), etc.

LEGHORN, a walled city and seaport of Italy on the Mediterranean Sea. Leghorn has an outer and inner harbor and a good roadstead. A lighthouse, 170 feet above sea-level, commands the harbor. Among the chief articles of manufacturing industry are woolen caps, straw hats, glass, paper, soap, starch, rope, leather, etc. Shipbuilding is extensively engaged in. It has besides a large export and import trade. Leghorn was made a free port about the middle of the 16th century, and owes much of its eminence and prosperity to the fostering care of the Medici family and the subsequent rulers of Tuscany. Pop. about 110,000.

LEGHORN, a kind of plait of the straw of bearded wheat cut green and bleached, and used for bonnets and hats. It derives its name from being imported from Leghorn. (A hat made of the plait described is called a Leghorn.) The kind of wheat in question is about 18 inches high. It is grown on poor sandy soil on the banks of the Arno, between Leghorn and Florence, expressly for manufacture into hats.

LEGION, a division of the ancient Roman army, consisting of a number of men varying at different periods from 2,000 to 6,000. Originally the legion was divided into 15 companies (*manipuli*), each of which contained 60 rank and file, two officers—called centurions—and one standard-bearer (*vexillarius*). Afterward it was divided into 10 cohorts, each cohort into three companies (*manipuli*), and each company into two centuries.

LEGION, AMERICAN. See AMERICAN LEGION.

LEGION OF HONOR, a French order of merit founded by Napoleon I., when first consul, as a reward for services or merit, civil or military. It consists of various grades as grand crosses, grand officers, commanders, officers, and legionaries. For their services in France during the World War a number of American officers, soldiers, and civilians were awarded different grades of this order by the French Government.

CROSS OF THE LEGION OF HONOR

LEGISLATURE, a word which, when applied to the Federal government, refers to the Congress, which is composed of a Senate and a House of Representatives. When the States and Territories are referred to it is used to designate the legislative branch of the government, though in the majority of the States the official title is "general assembly," while

in others the terms "general court" and "legislative assembly" are employed. In all the States the Legislature is composed of two houses, though Pennsylvania, up to 1790, and Vermont, up to 1836, had but one house. The upper house is called the Senate in the States, and the Council in the Territories; the lower is called the House of Representatives in the Territories and most of the States, but is known as the House of Delegates, the Assembly, or the General Assembly, in a few of the States.

LEGNAGO (len-yä'gō), one of the four fortified towns of Northern Italy, known as the Quadrilateral. It has a considerable trade in rice, corn, and silk. The fortifications were razed by Napoleon in 1801, but rebuilt 14 years later.

LEGUMINOSÆ, leguminous plants, an order of perigynous exogens, alliance Rosales. Known genera 297, species 4,700, diffused, though not equally, all over the globe. It is divided into three sub-orders, *Papilionaceæ, Cæsalpinieæ,* and *Mimoseæ.*

LEH, the walled capital of Ladakh, State of Kashmir, India; 3 miles from the bank of the Indus, 11,538 feet above the sea; is one of the chief markets of the trade between Tibet and Chinese Turkestan on the one hand and the Punjab on the other. Pop. about 4,000.

LEHIGH, a river which flows 120 miles through Eastern Pennsylvania to the Delaware River. Its scenery is very picturesque, and the valley is famous for its rich mines of anthracite coal.

LEHIGHTON, a borough of Pennsylvania, in Carbon co. It is on the Lehigh Coal and Navigation Canal, and on the Lehigh Valley and the Central of New Jersey railroads. Its industries include silk and lace mills, a meat-packing house, a shirt factory, car shops, stone works, foundries, etc. It contains two parks. Pop. (1910) 5,316; (1920) 6,102.

LEHIGH UNIVERSITY, an educational non-sectarian institution in South Bethlehem, Pa.; founded in 1865; reported at the close of 1919: Professors and instructors, 90; students, 1,100; volumes in the library, 140,000; productive funds, $3,000,000; income, $450,000; president, Henry S. Drinker, LL. D.

LEHMANN, FREDERICK WILLIAM, an American lawyer and public official, born in Prussia in 1853. He graduated from Tabor College, Iowa, in 1873. After studying law he was admitted to the bar in 1873 and practiced in Nebraska City, Des Moines, Iowa, and St. Louis. He served as solicitor-general of the United States from 1910 to 1912. He served on several important commissions and was United States delegate to the A. B. C. mediation at Niagara Falls.

LEHMANN, LILLI, a German operatic singer, born in 1848, at Würzburg. She received her first lessons in music from her mother, who was also an opera singer. She made her first appearance in Berlin in 1870, and was at once successful. She afterwards sang in London, and in 1884 came to New York, where she was engaged as the principal soprano at the Metropolitan Opera House. She remained here until 1890. She then returned to Germany, where in 1901 she organized the Mozart Festivals in Salzburg. She was considered one of the greatest Wagnerian singers of her day.

LEIBNITZ, or **LEIBNIZ, GOTTFRIED WILHELM VON, BARON,** a German philosopher and scholar; born in Leipsic, July 6, 1646. His learning was universal, and in every branch he was master. At 15 he entered Leipsic University for the study of law and philosophy. He then passed to Jena, devoting himself there chiefly to mathematics. In the meantime he composed two disquisitions, to qualify himself for a degree at Leipsic; the degree was refused because of his youth, but in 1666 he took the doctor's degree in law at Altdorf. He reached the highest eminence among the scholars of his time in languages, history, divinity, philosophy, jurisprudence, political science, physical science, mathematics, even in polite letters. His essays and disquisitions in the field of mere erudition are numerous, such as the "Acta Eruditorum," "Miscellanea Berolinensia," "Journal des Savants," and in his voluminous "Correspondence." Among his theological and philosophical writings are: "Essays on God's Goodness, Man's Freedom, and the Origin of Evil" (1710); "Principles of Nature and Grace," (1717); "New Essays on the Human Understanding"; "Refutation of Spinoza," first printed in 1854. An incomplete edition of his "Mathematical Works" was published in 11 volumes (1884). He died in Hanover, Nov. 14, 1716.

LEICESTER (les'ter), **ROBERT DUDLEY, EARL OF,** an English noble and favorite of Queen Elizabeth; born June 24, 1532, or 1533. On the accession of Elizabeth to the throne, Dudley met with rapid preferment, winning the queen's regard by his courtly address and handsome person. In 1560, his first wife, Amy Robsart, died, not without suspicion of violence. In 1564 Dudley became chancellor of Oxford University

and Earl of Leicester. In 1575 he entertained Elizabeth at his castle in Kenilworth with almost royal magnificence. In the year following Leicester secretly married the widow of the Earl of Essex, a step never forgiven by Elizabeth. In 1588, on the threatened invasion of the Spanish Armada, Leicester was appointed Lieutenant-General of the kingdom, and died Sept. 4, in the same year.

LEICESTERSHIRE, an inland county of England, bounded N. by Nottinghamshire, E. by Lincolnshire and Rutland. Surface is undulating, the highest point being in Charnwood Forest, of which Bardon Hill has an elevation of 912 feet. The county is traversed by the Soar and Avon, tributaries of the Trent and Severn. The minerals include coal, slate, and granite. The soil is loamy, and the richest agricultural district is E. of the Soar, which is largely pasturage. Wheat, oats and barley are under cultivation. About nine-tenths of the total area is cultivated, but the proportion of pastureland is increasing. The county is famous for fox hunting, and has produced famous cricketers. Capital, Leicester. Area, 819 square miles. Pop. about 250,000.

LEIF ERICSSON, a half-mythical Scandinavian voyager who flourished about the year 1000 A. D. He is reported to have sailed from Iceland and to have discovered the American continent, and in 1887 there was erected in Boston, Mass., a statue to "Leif the Discoverer."

LEIGH, a city in England about 10 miles from Manchester. Situated near coal mines and in one of the leading industrial sections of England it has important silk, glass, and textile manufactures. One of the oldest and most heavily endowed of the English grammar schools is located here. Pop. about 45,000.

LEIGHTON, SIR FREDERICK, an English artist; born in Scarborough, England, Dec. 3, 1830. His art studies were made at Florence (1845–1846), the Academy at Frankfort-on-Main (1846–1848), Brussels (1848–1849), Paris, (1850), and Frankfort again (1851–1853). From Rome he sent to the Academy of 1855 his picture of Cimabue's Madonna carried in procession through the streets of Florence, which was purchased by the queen. For four years he resided at Paris, enjoying the friendly counsel of Ary Scheffer, Robert Fleury, and other painters, and then took up residence in London. In 1864 he was elected an associate of the Royal Academy, and in 1869 an academician. In 1878 he succeeded Sir Francis Grant as president of the Academy, was knighted, and was named an officer of the Legion of Honor. Seven years later he was made a baronet. Special mention may be made of his "Hercules Wrestling with Death" (1871); "Daphnephoria" (1876); "Music Lesson" (1877); "Sister's Kiss" (1880); "Phryne" (1882); "Cymon and Iphigenia" (1884); "Captive Andromache" (1888); and "Ball Players" (1889); and the large frescoes at the South Kensington Museum, representing the industrial arts applied to war, and the arts of peace. He achieved a high place as a sculptor by his "Athlete Strangling a Python" (1876), and his "Sluggard" (1886). He had fine poetic quality, conjoined with elegance in drawing and great refinement in execution. He died in London, Jan. 25, 1896.

LEINSTER, a province of Ireland, coterminous with the ancient kingdom of the Mac Morroughs, occupying the central and southeastern part of the island, and extending to the left bank of the Shannon. It includes counties Wexford, Kilkenny, Wicklow, Carlow, Longford, Westmeath, Meath, Louth, King's County, Kildare, Dublin, Queen's County. Meath, now part of Leinster, was the ancient domain of the high-monarchs of Ireland. The kings of Leinster reigned with full power till 1171, and with restricted power to the 16th century. The daughter of Diarmuid, King of Leinster at the date of the Norman French invasion of Ireland in 1169, married Strongbow, who led these adventurers. Gradual division of the old principality followed until its organization into the present county system. Pop. about 1,165,000.

LEIPOA (lī-pō'ä), a genus of Rasores birds, family *Megapodidæ*, the only known species of which is *L. Ocellata*, the "native pheasant" of the colonists of Western Australia; which in its habits is very like the domestic fowl. It deposits its eggs in a mound of sand about three feet high, the inside being lined with layers of dried leaves, grasses, etc. The bird never sits on the eggs, but leaves them to be hatched by the heat of the sun's rays.

LEIPSIC (līp'sik), a commercial city of Germany, kingdom of Saxony, on the White Elster (a tributary of the Saale). The appearance of the city at a distance is not imposing; it stands in a wide plain, which, though fertile, is unvaried by a single eminence to relieve its sameness. Few cities exhibit so much of the carved masonry which characterized the old German style of building, joined with so much stateliness. Leipsic is pre-

eminently a literary center; besides possessing a noble university and various fine libraries and scientific institutions, it is the grand emporium of the German book trade. The great sale of new works takes place at the Easter fair. Among its chief manufactures are silk goods, stockings, leather, hats, playing-cards, paper hangings, tallow-chandlery, gold and silver wares, liquors, etc. Leipsic and vicinity was, in October, 1813, the scene of one of the most tremendous battles of modern times. Napoleon I. having concentrated at this point an army of about 135,000 men, was attacked on the 16th by the allies under Prince Schwartzenberg, Blücher, and other generals, accompanied by the Emperors of Russia and Austria and the King of Prussia. The allied force amounted to at least 250,000 men. The struggle, which was fierce, obstinate, and bloody, terminated at nightfall without advantage to either party. The next day passed over with the same results. On the 18th, shortly after the renewal of the fighting, a Saxon brigade deserted the French, and went over to the allies, which gave the latter an advantage that all the genius of Napoleon could not counteract. Though the French maintained their ground during the day, a retreat became indispensable; and owing to the accidental blowing up of the bridge, a part of the French army was cut off; thus, Napoleon lost 25,000 men, who fell into the hands of the allies as prisoners, exclusive of the far greater number who fell in the previous battles. Prince Poniatowski ("the last of the Poles"), after displaying prodigies of valor, lost his life in the retreat on the 19th, having been drowned in attemping to cross the Elster. This great battle completely emancipated Germany from the French yoke. In 1913 a great monument 300 feet high was unveiled to celebrate the victory. Pop. about 630,000.

LEITH, the 6th largest town in Scotland, an important seaport, on the S. shore of the Firth of Forth, 2 miles N. of EDINBURGH (*q. v.*), with which it is now connected by a continuous line of street. Pop. (1918) 83,828.

LEITHA, an Austrian stream rising in Lower Austria, and flowing N. E. to join the Danube nearly along the frontier of Lower Austria and Hungary. Since the reorganization of the empire in 1867, it has become usual to speak of Hungary and the lands belonging to the Hungarian crown as Trans-leithan, and the rest of the empire as Cis-leithan—thus giving the stream a factitious importance.

LELAND, CHARLES GODFREY, an American author; born in Philadelphia, Pa., Aug. 15, 1824. He was graduated at Princeton College in 1845, and afterward studied at Heidelberg, Munich, and Paris. He was admitted to the Philadelphia bar in 1849, but turned to journalism. From 1869 he resided chiefly in England, and investigated the language and customs of the gipsies, a subject on which between 1873 and 1890 he published four valuable works. Leland is most widely known, however, for his dialect poems in "Pennsylvania Dutch," the famous "Hans Breitmann Ballads" (1871). Other works are "The Poetry and Mystery of Dreams" (1855), "Meister Karl's Sketch Book" (1855), "Legends of Birds" (1864), "Fu-Sang" (1875), and "Algonquin Legends" (1884). In 1885 he edited a series of "Art-Work Manuals." He died at Florence, Italy, March 20, 1903.

LELAND, JOHN, an English antiquary; born in London, England, about 1506. After a residence in Paris he became chaplain to Henry VIII., who in 1533, commissioned him as "king's antiquary," with power to search for records of antiquity in the cathedrals, colleges, abbeys, and priories of England. His Church preferments were the rectories of Pofeling, in the marches of Calais, and Haseley in Oxfordshire, a canonry of King's College (now Christ Church), Oxford, and a prebend of Salisbury. His last five years were darkened by insanity. Died April 18, 1552.

LELAND STANFORD, JUNIOR, UNIVERSITY, a co-educational nonsectarian institution in Palo Alto, Cal.; founded in 1891; reported at the close of 1919: Professors and instructors, 345; students, 2,441; volumes in the library, about 300,000; productive funds, about $25,000,000; income, $1,400,000; number of graduates, 1,142; president, Ray Lyman Wilbur, M.D.

LELY, SIR PETER, an Anglo-Dutch painter; born in Soest, Westphalia, in 1617. He settled in London in 1641 and took to portrait painting, having hitherto essayed landscapes and historical subjects. He was employed successively by Charles I., Cromwell, and Charles II. From the death of Vandyck he was the first painter of the day in England down to the arrival of Kneller. His best known pieces, apart from portraits of his royal patrons, are the beauties of the court of Charles II. at Hampton Court. He died in London, England, Nov. 30, 1680.

LEMAÎTRE, FRANÇOIS ÉLIE JULES (le-mātr′), a French dramatist;

born in Vennecy (Loiret), France, April 27, 1853. He was the author of five volumes of literary biographies, "Contemporaries" (1885–1895). He was for many years dramatic critic of the "Journal des Débats." His début as a dramatist was made at the Odéon with "La Revoltée" (1889), followed by "Deputy Leveau" (1890); "Bertrade," "The Kings" (1893), and "The Pardon" (1895). He is the author of two volumes of poems, "Medallions" (1880) and "Petites Orientales" (1882); "Corneille and Aristotle's Poetics" (1888); "Myrrha: Stories" (1894). Died, Paris, Aug. 6, 1914.

LEMAN, GENERAL, a Belgian soldier. He was born at Liège in 1851 and was educated at the Athenæum, Brussels, after which he went into the army and attended a military school. He showed considerable talent and was gradually promoted until he had command of the

GENERAL LEMAN

Belgian army situated at the stronghold of Liège. He commanded the Belgian forces that opposed the invasion of the German army in 1914, and was rescued from under the ruins of a fort destroyed by the big German guns. He died in 1921.

LEMAN, LAKE. See GENEVA, LAKE.

LE MANS. See MANS, LE.

LEMBERG (formerly Löwenburg; Polish name "Lwów"), the capital of the Austrian district of Galicia and Lodomeria; on a tributary of the Bug, in a narrow basin among hills, 212 miles E. of Cracow. It is defended by a citadel, around which the modern town has grown up. Lemberg is the seat of a Roman Catholic, a Greek United, and an Armenian archbishop, and has nearly 30 churches. The Dominican contains a greatly venerated image of the Virgin; the Greek cathedral, built in the Italian style in 1740–1779; the Gothic Roman Catholic cathedral (1350–1640); and the Armenian cathedral, dating from the 14th century. Here also is the seat of the national institute founded (1784) by Joseph II., with a library of over 81,000 volumes and 3,000 MSS., chiefly of Polish literature. There is a considerable trade in flax, hemp, cloth, leather, and agricultural products. The manufactures embrace machinery, earthen-ware, oil, beer, etc. Founded in 1259, Lemberg was an important city of Poland from 1340. It has been several times besieged, on the last occasion in 1848. It fell to Austria at the first partition of Poland. In the World War when the Russians overran Galicia in 1914, Lemberg was captured on Sept. 3. It was retaken by the Germans June 22, 1915. Pop. about 212,000.

LEMNOS, a Turkish island in the N. part of the Ægean Sea; 40 miles S. E. of Mount Athos and about the same distance S. W. of the Dardanelles. It is nearly split in two by a large bay on the S. coast and another on the N. coast. Area, 180 square miles; pop. about 27,000, all Greeks, except 5,000 Turks. The principal products are corn, wine, and tobacco. In antiquity and all through the Middle Ages the most notable product of the island was the "Lemnian earth," in general request as an antidote against snake bites, also as a remedy in cases of plague, dysentery, etc. It was extracted only on one day in the year, August 6, with an accompaniment of religious ceremonies, from a spot near the ruined site of the ancient city Hephæstia, in the N. E. of the island. It has now gone out of repute, and very little is extracted every year. Lemnos was regarded by the Greeks as sacred to Hephæstus. It was conquered by the Persians in the reign of Darius Hystaspes; but Miltiades wrested it from them for the Athenians. In 1657 it passed into the hands of the Turks, from the Venetians. The chief town is Kastro (the ancient Myrina), a fortified place on the W. coast. Pop. about 3,000.

LEMOINE, FRANÇOIS, a French historical painter; born in Paris in 1688. In 1718 he became a member of the Academy, and in 1723 was appointed professor of the Academy. He painted the chapel of the Holy Virgin in the church of St. Sulpice, and subsequently

the ceiling in the Hall of Hercules at Versailles. In a fit of insanity he put an end to his life in Paris, June 4, 1737.

LEMON, the fruit of a small tree (*Citrus Limonum*) belonging to the same natural order as the orange (*Aurantiaceæ*). There are many varieties of the lemon, but they may all be included under the following four distinct types: (1) The common or Genoa lemon, which is the most plentiful in the shops. (2) The thin-skinned lemon, which is of large size, having a thin, smooth shining fragrant rind. The pulp is very delicate and juicy, with a delicious aroma. (3) The sweet lemon, which, while having the external appearance of the lemon, has the pulp sweet like that of the orange. (4) The citron lemon, or the Ligurian lemon of commerce. It is a large oblong fruit, with a thick, rough warted rind, which is eatable. The pulp, however, is the least delicate of all lemons. The peculiar and grateful flavor of the juice of the lemon is mainly due to citric acid. The most valuable of its properties, however, is the prevention and cure of scurvy. The well known use of the rind, either fresh or preserved, in the cook's and the confectioner's arts for flavoring and ornamenting dishes, cakes, and candies need only be alluded to. The essential oil is obtained from the rind. The lemon is largely cultivated in all the warmer countries of the S. of Europe and those bordering on the Mediterranean, and it is naturalized in some parts of South America and in the East and West Indies, and in parts of Australia.

The oil or essence of lemons is extracted from the fresh lemon peel either by pressure or by distillation. It enters into most perfumes, such as eau de Cologne, etc. The so-called salt of lemons, or salt of sorrel, is the binoxalate of potash.

LEMON, MARK, an English humorist; born in London, England, Nov. 30, 1809. About 1825 he wrote a farce, the first of a long series of melodramas, operettas, etc. He produced, moreover, several novels (the best, perhaps, "Falkner Lyle," 1866), children's stories, and essays, and appeared as a lecturer and public reader. In 1841 he helped to establish "Punch," of which for the first two years he was joint-editor with Henry Mayhew, and thereafter sole editor till his death, in Crawley, Sussex, May 23, 1870.

LE MOYNE, CHARLES, a French pioneer; born in Normandy, France, in 1626. Proceeding to Canada in 1641, he lived among the Huron tribe of Indians and fought with the Iroquois. In 1668 Louis XIV. made him Seigneur de Longueuil, and afterward also de Chateauguay. He was for several years Captain of Montreal, and died in 1683. Of his 11 sons, nearly all became distinguished. The eldest, CHARLES, Baron de Longueuil, was born in 1656, and in his youth served in the French army. He was made governor of Montreal and baron in 1700, and became commandant-general of the colony. He died at Montreal in 1729. His descendant, CHARLES COLMOR GRANT, had his Canadian title of 7th Baron de Longueuil officially recognized by the queen in 1880. Another son, JOSEPH, became an officer in the French navy, and in 1694–1697 brought vessels to Hudson bay to cooperate with land forces under his brother Iberville. He subsequently conveyed colonists to Louisiana, surveyed its coast, and aided in capturing Pensacola.

LEMPRIÈRE, JOHN (*long*-prē-ār'), a British educator; born in Jersey, about 1765. He was educated at Winchester and Oxford. He was in turn head-master of Abingdon and Exeter grammar schools, rector of Meeth in Devonshire and of Newton-Petrock in the same county. His famous "Classical Dictionary" (1788) remained for many years the standard work of reference in England on ancient mythology, biography, and geography. Another work of Lemprière's was "Universal Biography" (1808). He died in London, England, Feb. 1, 1824.

LEMUR, the name of the typical genus of the sub-family *Lemurinæ*. Habitat, Madagascar and the adjacent islands. It contains many species. Generic characteristics: Long snout, small flat skull, long body, with narrow flanks. Hind limbs rather longer than the fore, long furry tail, hands and feet short, with a broad great toe; ears tufted or hairy, and moderate in length. In some kinds the head is surrounded by a ruff of fur; the color varies even in individuals of the same species. The true lemurs are diurnal arboreal animals, principally frugivorous, but feeding occasionally on birds' eggs, and even small birds.

The *Galeopithecidæ* or flying lemurs are represented by a single genus including a few species. The flying membrane or patagium, from which their peculiar characteristics are derived, connects the fore and hind limbs, extending along the sides of the body and of the neck, and

also joins the hind limbs and tail. The membrane also unites the digits of the foot, and is hairy on both sides. The fore limbs are longer and more powerful than the hind limbs. These forms are arboreal in their habits, and make short flying leaps from tree to tree, the membrane acting like a parachute in supporting them during their flight or leap through the air. They are fruit-eaters, but also prey upon insects and birds. They are nocturnal in habits; and when at rest suspend themselves from trees by

RING-TAILED LEMUR

the limbs, the body and head being pendent. The mammary glands are four in number and are placed on the breast. All other *Quadrumana* possess only two mammæ. The most familiar species is the *Galeopithecus volitans* of Java and the neighboring islands. It measures about 20 inches in length.

LENA, a river of Eastern Siberia, rising amid the mountains on the N. W. shore of Lake Baikal, in the government of Irkutsk, flows first N. E. to the town of Yakutsk, where it is 6½ miles wide, then N. to the Arctic Ocean, into which it falls by several mouths, forming a delta 250 miles wide. Its course is 2,800 miles in length, the area of its basin 772,000 square miles. Its chief affluents are the Vilui (1,300 miles) on the left, and the Vitim (1,400), the Olekma (800), and the Aldan (1,300) on the right. Navigation on the Lena is open from Yakutsk upward from May till October. During spring the waters of the river regularly overflow their banks. The Lena is a principal artery of the trade of Eastern Siberia. The riverine sand of the Vitim and Olekma yields richly in gold; salt, coal, iron, copper, and argentiferous lead exist. Large quantities of mammoth ivory have been found in the delta.

LENAPES, LENNI-LENAPES (len′-aps), or **DELAWARES**, one of the Algonquin tribes of American Indians, which about the early part of the 16th century occupied the valleys of the Delaware and Schuylkill. They were, according to tradition, pre-eminent for wisdom and valor, exerting a powerful influence over the neighboring tribes from the Hudson to the Chesapeake. This influence they upheld till, by the rise of the Iroquois power, they lost their ascendency and in a manner their independence. They soon afterward removed to the banks of the Susquehanna. In 1751 they are found at Shamokin and Wyalusing on the Susquehanna, where they became exposed to the violence both of the Iroquois and the whites. The English disregarded their peaceful attitude (they having been taught the principles of peace and non-resistance by Penn and Zinzendorf), considering them under French influence; and the Iroquois, offended at their neutrality, plundered their crops and devastated their villages. In 1778 they made a treaty of amity with the United States at Fort Pitt, in which the latter agreed to build a fort for their protection, which is the origin of Fort McIntosh. In 1795 they were parties, with the Wyandots, Shawnees, and other western tribes, in the general pacification of Fort Grenville. These were further strengthened by the treaties of Fort Wayne, in 1803, and Vincennes, in 1804; and the frontiers were unmolested till the movement of Tecumseh in 1811. They gradually continued W., stopping for a time at White river, Indiana, and afterward crossing the Mississippi, finally settled on fertile tracts in Kansas, cultivating the soil, raising horses, cattle, etc., and dressing in many respects in civilized costume, the United States holding in trust for them a considerable fund. They were removed in 1870 to a reservation in the Indian Territory. They were later incorporated with the Cherokees.

LENCORAN, a Russian seaport on the Caspian Sea, 130 miles S. of Baku. In the vicinity are celebrated sulphur springs. It was surrendered to Russia by Persia in 1813.

LENINE, NIKOLAI, a leader of the Bolshevik government in Russia. His name is Vladimir Ilyitch Uulyanoff and he was born of noble parentage at Simbirsk on the Volga in 1870. Taking to economics very early in life he became a

convert to Marx doctrines and accepted the dictum of the Third International Congress in favor of the creation of an international state to be dominated by the workers. Although elected to the Second Duma he was exiled in 1905 when the reaction set in. During the early part of the European War of 1914 he was interned in Cracow, Austria, as an alien enemy, but later received permission to go to Switzerland. When the Revolution of March, 1917, took place in Russia, Lenine, together with several other Russians in exile, was allowed to proceed to Russia across Germany. Arriving at Petrograd before Kerensky's government had been established he at once set to work, advocating immediate peace and the "dictatorship of the proletariat." His effort to overturn the Kerensky government in July of 1917 was a

NIKOLAI LENINE

failure and Lenine was forced to go into hiding for a time. November, 1917, crowned his efforts with success and he found himself at the head of Russian affairs. Well knowing the longing of the Russian people for peace, Lenine immediately opened negotiations with the Germans and in March of 1918 signed the peace of Brest-Litovsk by which Germany was granted a considerable slice of Russian territory. Although formally at peace with Russia, Lenine encouraged his agents to spread their propaganda among the Germans and effectually contributed to the outbreak of the revolution in Berlin. The Allied Governments continued hostile to Lenine and gave support to men who had for their object the overthrow of the Soviet Government. One by one, however, Lenine defeated them all and the year 1919 ended with his power more absolute in Russia than when it had begun. Many accusations have been made by his enemies against him: that he organized a reign of terror in Russia which threatened to exterminate all who refused to acknowledge his power; that he accepted German gold and has acted in the interest of Germany; that he has profited by the distresses of his people. The truth of these sweeping accusations cannot as yet be determined. That he is bitterly hated in Russia by some is shown by repeated efforts to assassinate him. The Allied Governments, including the United States, have steadily, up to July, 1920, refused to recognize his government, and for a considerable time held Russia under a strict blockade. Prior to his accession to power in Russia Lenine published several works on Socialism, the most important of which is his "Development of Capitalism in Russia."

LENNEP, JACOB VAN, a Dutch author; born in Amsterdam, Holland, March 25, 1802. He was educated for the bar, passed as a barrister, and soon achieved a great reputation for legal knowledge. Yet without neglecting his extensive practice he for more than 30 years cultivated literature. Lennep first appeared as an author shortly before 1830 in a work on national legends, immediately followed by his comedies. Of his numerous novels several (including "The Rose of Dekama" and "The Adopted Son") have been translated into English, French, and German. He wrote much for the stage, translated from Byron and other English poets, and published a Dutch history for the young. He died Aug. 25, 1868.

LENNOX, an ancient Scotch territory, comprising the basin of the Leven and Loch Lomond—the whole of Dumbartonshire, great part of Stirlingshire, and portions of Perth and Renfrew shires. It gave name to an earldom (1174-1581), and then to a dukedom, conferred by Charles II. in 1680 on one of his illegitimate sons, Charles, Duke of Richmond and Lennox, who in 1702 sold the Lennox estates to the Marquis of Montrose.

LENROOT, IRVINE LUTHER, United States Senator from Wisconsin, born in Superior, Wis., in 1869. He was educated in the common schools and after studying law was admitted to the bar in 1897. In 1901 he was elected a

member of the Wisconsin House of Representatives and served as its speaker in 1903 and 1905. He was elected to the 61st Congress in 1909 and was successively re-elected until his election to the Senate in 1918. He took a prominent part in the Senate debates on the Treaty of Peace and the League of Nations. He was one of the most prominent of the Republican Senators who advocated the so-called mild reservations. He was generally recognized as one of the most able members of the Senate.

LENS, a town of France, in the Pas-de-Calais department, 9 miles N. W. of Arras. Has coal mines and sugar refineries. Is well fortified. In their great race to the sea in 1914 the Germans captured Lens and threatened to outflank the French army, so that most of the French forces were compelled to retire to the hills in the vicinity. The German lines were then formed in a prominent salient westward embracing Ablain-St. Nazaire and Carency on the higher ground so as to insure possession of Lens which was an important center of communications. Here the German trench works were elaborate, including such work as the famous Labyrinth. Nevertheless the works were taken by the French in June, 1915, and remained in their hands till the German spring drive of 1918. Pop. about 25,000.

LENS, a transparent substance, usually glass, surrounded by curved surfaces so formed that rays of light passing through it are made to change their direction, and to magnify or diminish objects at a certain distance. Lenses are double convex, or convex on both sides; double concave, or concave on both sides; plano convex, or plano concave, *i. e.* with one side plane and the other convex, or concave, or convex on one side and concave on the other. If the convexity be greater than the concavity, or if the two surfaces would meet if produced, the lens is called a meniscus; and if the concavity be greater than the convexity, the lens is termed concavo-convex. Every system of lenses, however complicated and whatever be the mutual distances of the lenses, will, if the whole be centered on a common axis, produce a real image somewhere in front of the last refracting surface, or else will appear to produce a virtual image somewhere behind. The rays on being traced through the complex combination—*e. g.*, a telescope—undergo numerous deviations: ultimately there is a deviation which might have been equally produced by an equivalent lens; equivalent in the sense of producing an equal ultimate deviation, for the image is not formed in the same place as the "single equivalent lens" would have formed it in. The system of lenses is approximately equivalent in its action to a simple lens plus a determinate shifting of the focus. Hence a simple lens-diagram, modified so as to represent the shifting, will represent the aggregate effect of the most complex system of lenses. See OBSERVATORY.

LENT, a holy season of the Church, of long observance in some communions.

Roman Church.—A fast—formerly of varying duration, but now of 40 days—observed as a preparation for the Easter festival. The severity of the Lenten fast is now much modified, and the extent (both as to time and quantity) to which lacticinia may be used is made known by the Lenten indults published by the bishops, and read in all the churches of the diocese at the parochial mass.

Greek Church.—The Greek Lent lasts for seven weeks—35 days, for on all Saturdays (except Holy Saturday), on the Feast of the Annunciation, and on all Sundays, the law of fasting is not in force. Strict abstinence from flesh-meat and lacticinia begins on the Monday in Quinquagesima week.

Anglican Church.—In the "Table of Days of Fasting and Abstinence," the Forty Days of Lent stand first; but from the Reformation till about the middle of the 19th century the practice of fasting gradually fell into desuetude. With the Oxford movement came an endeavor to restore ancient practices and discipline; and the influence of the High Church clergy has been productive of a stricter observance of this penitential season throughout the Church.

LENTIL, a small branching plant, about a foot and a half high; the leaves with 8 to 12 oblong leaflets, and pale blue flowers in twos and threes, and short legumes with two to four seeds. In Egypt and Syria lentils, parched in a frying-pan, are sold as nourishing food, especially for those who are going on long journeys. In France and Germany three varieties are cultivated, the small brown, which is the lightest flavored and the best for haricots and soups; the yellowish one, which is a little larger and the next best, and the lentil of Provence, nearly as large as a pea, with luxuriant straw, and more suited for fodder than for human food. From the seeds of lentils is prepared *Revalenta arabica*. The lentils of Scripture were *Ervum lens*, the red pottage made by Jacob was composed of them (Gen. xxv. 34; II Sam. xviii: 11; Ezek. iv: 9).

LEO, the name of various rulers of the Eastern Empire, as follows:

Leo I., called the Elder, emperor of Constantinople, ascended the throne in 457. He was a Thracian of obscure birth, but attained the highest military rank, and was proclaimed emperor by the soldiers in succession to Marcianus. He confirmed the decrees of the Council of Chalcedon against the Eutychians, and renewed the war against the Vandals; but was unfortunate, through the treachery of his general Aspar, whom he put to death with his family in 471. The Goths, to revenge the fate of Aspar, poured into the empire, which they ravaged to the walls of Constantinople. He died in 474.

Leo II., called the Younger, was the son of Zeno and of Ariadne, daughter of Leo I. He succeeded his grandfather in 474. Leo II. is said to have been put to death by his own father after reigning only 10 months.

Leo III., called the Isaurian, from the country of his birth, where his parents were poor mechanics. Leo entered the army, and became general-in-chief of the army of Asia, under Justinian II. In 716 he marched against Theodosius III., who had been proclaimed emperor on the deposition of Justinian II.; and Theodosius resigned his crown to him in the following year. The Saracens, having ravaged Thrace, laid siege to Constantinople, which was bravely defended by Leo, who compelled them to retire. His reign, however, was tyrannical, and he drove the patriarch Germanus from his seat, in which he placed Anastasius. He was also guilty of burning the library at Constantinople. The popes Gregory II. and Gregory III. having excommunicated him, he prepared an armament to invade Italy, but the ships were destroyed by a storm. He died in 741.

Leo IV., grandson of Leo III.; born in 751, and succeeded his father in 775. He repulsed the Saracens in Asia. He died in 780.

Leo V., called the Armenian, from the country of which he was a native. He rose to the rank of general but, being accused of treason, the emperor Nicephorus disgraced him, and imprisoned him in a convent. Michael Rhangabus, on ascending the throne in 811, restored him to his rank; but Leo V., profiting by the misfortunes of his master, headed a military revolt and was elected emperor by the troops in 813. He was one of the most violent of the Iconoclastic princes. He was assassinated in 820.

Leo VI., styled the Philosopher; born in 865, was the son and successor of Basilius, the Macedonian, and ascended the throne in 886. The Hungarians, Saracens, and Bulgarians having united against the empire, he called to his assistance the Turks, who entered Bulgaria, which they ravaged with fire and sword. Leo VI. drove the patriarch Photius from his seat; and Nicholas, one of the successors of Photius, excommunicated the emperor; for which Leo VI. deposed him. He wrote some books, the most interesting of which is a treatise on tactics printed at Leyden in 1612. He died in 911.

Also the name of various Popes, as follows:

Leo I., surnamed The Great, Pope, succeeded Sextus III. in 440. He took a very decided part against the Manichæans and other schismatics, held a council at Rome against Eutyches in 449, and presided by his legates at the General Council of Chalcedon two years later. When Attila invaded Italy, Leo I. was sent by the Emperor Valentinian to dissuade him from his threatened march on Rome, and Rome was saved. Leo I. afterward saved the city from being burned by Genseric. He is the first Pope of whom we possess any written works. He died in 461.

Leo II., Pope; born in Sicily, succeeded Agathon in 682. He claimed authority over the Eastern Church and was succeeded by Benedict II. He died in 683.

Leo III., Pope; born in Rome. He succeeded Adrian I. in 795. His first act was to acknowledge the suzerainty of Charles the Great (Charlemagne) by sending him the keys of St. Peter's and the standard of the city of Rome. In 799 a conspiracy was formed against him by two of the Roman clergy, and he was attacked and shamefully treated while assisting at the procession of St. Mark. He escaped to Paderborn, to seek the protection of Charles, who sent him back with a powerful escort to Rome. In the following year, 800, Charles visited Rome, and was there crowned by the Pope, emperor of the Romans. A fresh conspiracy against Leo was discovered in 815, the authors of which were among the leading citizens of Rome and were condemned to death. He died the following year.

Leo IV., Pope, a Roman, succeeded Sergius II. in 847. The Saracens having invaded the Ecclesiastical States, he marched against them and obtained a complete victory; after which he put the city of Rome in a state of defense and founded the town of Leopolis. He died in 855.

Leo V., Pope, a Benedictine monk who, in 903, succeeded Benedict IV., but was deposed by his chaplain Christopher.

Leo VI., Pope, succeeded John X. in 928. He is said to have been put to death by Marozia.

Leo VII., Pope, was elected in succession to John XI., son of Marozia. He negotiated a peace between Hugo, King of Italy, and Alberic, Duke of Rome, the son of the celebrated Marozia.

Leo VIII., Pope, was elected to the papal chair on the deposition of John XII., in 963, under the patronage of Otho I. On Otho's withdrawal John re-entered Rome, and drove away Leo, but John dying soon afterward, Benedict V. was chosen Pope. The Emperor Otho subsequently took Rome, and exiling Benedict reinstated Leo, who died about 965.

Leo IX., Pope, previously named Bruno; born in Alsace, 1002. He was cousin to the Emperor Conrad the Salic, and was made Bishop of Toul at the age of 22. Through the influence of the Emperor Henry III., son of Conrad, and also by the counsel of the monk Hildebrand, he was elected at the Diet of Worms, in 1048, to succeed Damasus II. as Pope. In 1058 he led an army against the Normans in Italy, but was defeated and taken prisoner by their leader, Robert Guiscard, at the battle of Civitella. He was confined at Benevento about 10 months, and falling ill was allowed to return to Rome, where he died in 1064.

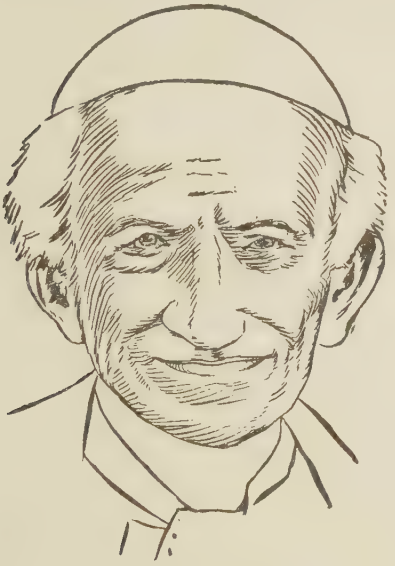
Leo X. (Giovanni de Medici), Pope, son of Lorenzo the Magnificent, sovereign of Florence; born in Florence, Italy, in 1475. His father had him dedicated to the Church, and made a cardinal by Innocent VIII. at the age of 13 years. Exiled from Florence, with the rest of his family, in 1494, he spent some years in travel in Germany, France, and Flanders. In 1503 he returned to Rome and applied himself to the cultivation of science and the fine arts. He was appointed by Julius II. legate with the papal army, and in 1512 he was taken prisoner by the French at the battle of Ravenna, and only regained his liberty after the evacuation of Milan by the French. The Medici were restored to their supremacy at Florence by the arms of the Spaniards. In the following year, 1513, Cardinal de Medici was elected Pope on the death of Julius II., and made his entry into Rome on April 11, the anniversary of his capture at Ravenna. His pontificate of nine years is one of the most momentous of modern history in relation to great political changes, to the revival of literature and art, and, above all, to the Reformation. Leo X. succeeded in terminating the disputes between Louis XII. and the court of Rome; he continued and brought to a close the Council of the Lateran; and, at a conference held at Bologna, concluded a concordat with Francis I. of France. In 1517 he discovered a conspiracy formed against him by two cardinals, one of whom was hanged, and the other imprisoned for life. He formed the project of a great war against the Turks, and resolved about the same time to complete the church of St. Peter at Rome. To raise the necessary money for these schemes he resorted to the sale of indulgences, the preaching of which in Saxony became the occasion of Luther's great enterprise. Leo published his first bull against Luther in June, 1520. See Luther. At the same epoch, war broke out afresh between the Emperor Charles V. and Francis I., the Pope allying himself first with Francis, and soon after with Charles. The patron of literature and the fine arts, he encouraged the study of Greek and the collection of ancient manuscripts; restored the Roman University and the great Laurentian Library of Florence; and gained the name, universally conceded, of "Restorator of Letters." He died in 1521.

Leo XI., Pope, of the Medici family, elected Pope 1605, at a very advanced age, and died in less than a month.

Leo XII. (Annibale della Genga), Pope; born in Genoa, 1760, succeeded Pius VII. in 1823. He is noted for his benevolent character, and his attempts to suppress banditti and the remains of Carbonarism. He died in 1829.

Leo XIII. (Gioacchino Pecci), Pope; born in Carpineto, Italy, March 2, 1810. He was the son of Count Ludovico Pecci. Educated first at the Jesuit College of Viterbo and the schools of the Collegio Romano, he proceeded to the College of Noble Ecclesiastics. He greatly signalized himself in mathematics, physics, and philosophy. Having become Doctor of Laws, he was appointed by Pope Gregory XVI., a domestic prelate and Referendary of the Segnatura in 1837. He then took holy orders, received from the Pope the title of prothonotary apostolic, and was appointed in succession apostolic delegate at Benevento, Perugia, and Spoleto. Sent to Belgium as nuncio in 1843, he was created Archbishop of Damietta to qualify him for the office. Three years later he was nominated Bishop of Perugia, and in the consistory of Dec. 19, 1853, he was created a cardinal by Pius IX. In September, 1877, he was selected by the Pope to fill the office of Cardinal Camerlengo of the Holy Roman Church. On the death of Pius IX. in 1878 Cardinal Pecci was elected as the representative of the Moderates. He assumed the title of Leo XIII. He re-

stored the hierarchy in Scotland, and composed the religious difficulty with Germany, so that when a dispute arose in 1885 between Germany and Spain as to the ownership of the Caroline Islands he was requested by Prince Bismarck to act as arbitrator. In political matters Leo permitted the Irish bishops to indulge their own views. In 1887–1888 there were great rejoicings at Rome to celebrate his Jubilee. In May, 1888, the Pope issued a decree denouncing in general terms the methods adopted by some of the Irish leaders in the Plan of Cam-



POPE LEO XIII.

paign. The following October he received a visit from the German emperor, William II. He regarded himself as the despoiled sovereign of Rome and as a prisoner at the Vatican; refused the income voted him by the Italian Parliament; and persistently declined to recognize the law of guarantees. In 1892–1893 he effected the establishment of a delegation to the Roman Catholic Church in the United States in the face of opposition by certain American prelates. In 1899 he issued a letter condemning Americanism as set forth by Father Hecker. He died in 1903.

Also the name of various kings of the Armenians, as follows:

LEO I., Prince or King of the Armenians, established in Cilicia, began to reign in 1123; taken prisoner by John Comnenus in 1137, he died in prison in 1141. LEO II., called The Great, grandson of the preceding, obtained permission of the emperor, Henry VI., and the Pope, Celestine III., to take the title of king; reigned 1185–1219. LEO III., greatly aggrandized his kingdom; reigned 1269–1289. LEO IV., succeeded 1305, dethroned and slain by a Mongol general, 1308. LEO V.'s reign was devastated by civil wars and the invasion of Mamelukes and Turcomans; reigned 1320–1342. LEO VI., proclaimed king 1361, was driven from his kingdom by the Sultan of Egypt, 1375, retiring to France; died there in 1393.

LEOMINSTER, a town which includes several villages in Massachusetts, in Worcester co. It is on the Nashua river, and on the New York, New Haven, and Hartford and the Boston and Maine railroads. Its industries include the manufacture of piano cases, furniture, woolen goods, paper, chemicals, toys, etc. It has a library, a town hall, high-school buildings, and a park. Pop. (1910) 17,580; (1920) 19,744.

LEON, an ancient kingdom of Spain, equivalent, generally, to the modern provinces of Leon, Palencia, Valladolid, Zamora, and Salamanca. It was the earliest Christian kingdom, next after Asturias, to be formed in Spain after the Moorish wave of conquest began to recede. It dates from the 10th century, and was united with Castile first by Ferdinand the Great in 1037, and finally in 1230. The modern province has an area of 6,165 square miles, and a pop. of 400,000. The country, which is intersected by the Douro and the Minho, is mountainous, being invaded on the N. by the Cantabrian Mountains. The soil is generally fertile. The inhabitants are for the most part uneducated and lazy, but honorable, hospitable, and good-natured. At Astorga the Maragatos are variously supposed to be descendants of the Celtiberi, the Visigoths, or the Moors. Leon is also the name of a part of Brittany.

LEON (the *Legio Septima Gemina* of the Romans), capital of the former kingdom and of the modern province of the same name, but now a sleepy agricultural town; in a plain, 256 miles N. W. of Madrid. Pop. about 18,000. The beautiful cathedral (about 1195–1512), a specimen of the purest Early Pointed, is French in character and, probably, origin. It contains the tombs of many sovereigns of Leon, saints, and martyrs. Leon is the center of the Spanish linen manufacture, and has a celebrated horse fair.

LEON, a city of Nicaragua, on an extensive plain. Once the boast of Spanish America, founded at the head of Lake Managua in 1523, removed hither in 1610,

and sacked by Dampier in 1685, it is now partly in ruins. The massive cathedral has been several times employed as a citadel during the civil wars. Pop. about 60,000.

LEON, PONCE DE. See PONCE DE LEON.

LEONARDO DA VINCI (-vēn'chē), an Italian painter, sculptor, architect, and engineer; born in Vinci, Italy, in 1452. About 1470 he entered the studio of Andrea del Verrocchio, by whom he was instructed in painting and modeling, and where he had Perugino and Lorenzo de Credi as fellow pupils. He visited the East, serving as engineer to the Sultan of "Babylon" or Cairo, and visiting Cyprus, Constantinople, and Armenia; and in 1482 he settled in Milan and attached himself to Lodovico Sforza, then guardian of his nephew, the Duke Gian Galeazzo, whom he afterward supplanted.

His famous picture of the "Last Supper," was painted on a wall of the refectory of a convent. It was completed in 1498. His sketches for various of its parts still exist at Windsor, in the Brera Gallery at Milan, and in the Louvre.

Among other paintings done in Milan were portraits of Lucrezia Crivelli and Cecilia Gallerani, mistresses of the duke, works that cannot now be identified, though "La Belle Ferronnière" of the Louvre has been regarded by some as the former likeness. The influence of Leonardo on art in Milan was clearly marked and lasting, for he founded an academy there in which Beltraffio and Andrea Salai, his favorite pupil, received instruction; and the great Bernardino Luini turned to his own uses many of the characteristics of his method. Leonardo was also much employed by his patron as an engineer. He devised a system of hydraulic irrigation of the plains of Lombardy, and acted as director of the court festivities and pageants.

After the fall and imprisonment of the Duke Lodovico, in 1500, Leonardo retired to Florence, and by 1502, he had entered the service of Cæsar Borgia, then Duke of Romagna, as architect and engineer. In the following year he returned to Florence, when he commenced a Madonna and Child with St. Anne for the Servite monks, of which only the noble cartoon now in the Diploma Gallery of the Royal Academy, London, was completed.

We now reach the period of Leonardo's famous contest with Michael Angelo. Both painters received commissions to decorate the Sala del Consiglio in the Palazzo della Signoria with important historical compositions. Michael Angelo chose a subject of "Soldiers Surprised While Bathing." Leonardo dealt with "The Battle of Anghiari" (1440). Two years were spent in the preparation of his cartoon; but, having employed a method of painting on the plaster which proved a failure, he, in 1506, abandoned the work. The cartoon is now lost. About 1504 was completed the most celebrated of Leonardo's easel-pictures, the half-length of Mona Lisa, third wife of Zanobi del Giocondo, a work purchased by Francis I. for 4,000 gold florins, and now one of the chief treasures of the Louvre. Another work, now lost, portrayed the celebrated beauty Ginevra Benci; and Pacioli's "On Divine Proportion" (1509), contained 60 geometrical figures from Leonardo's hand.

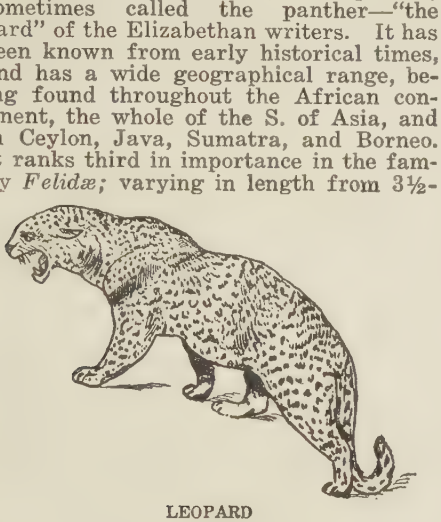
In 1506 he was employed by Louis XII., who died in 1515, when Leonardo was in Rome, competing with Michael Angelo for the execution of the façade of San Lorenzo in Florence. The young French king, Francis I., bestowed on him in 1516, a yearly allowance of 700 scudi, and assigned to his use the Château Cloux, near Amboise; and it was here that the great artist died, May 2, 1519.

LEONCAVALLO, RUGGIERO, an Italian composer; born in Naples, Italy, March 8, 1858. He was friendly with Wagner, and for many years resided as a teacher in Paris, where he composed songs and fugitive pieces. About that time he sketched his trilogy of Italian history, of which "Medici" is the first section. He produced, in Milan, in 1892, his "Pagliacci"; in 1893, "Medici." Other operas are "La Bohème" (1897), "Zaza" (1900), and "Der Roland" (1904). Died 1919.

LEONIDAS, a son of Anaxandrides, King of Sparta, succeeded his half-brother, Cleomenes I., about 491 B. C. When the Persian monarch Xerxes approached with an immense army, Leonidas opposed him at the narrow pass of Thermopylæ (480 B. C.) with a force of 300 Spartans, and rather more than 5,000 auxiliaries. The Persians attempted in vain to win over Leonidas by the promise of making him ruler of the whole of Greece; and when Xerxes sent out a herald calling the Greeks to lay down their arms, the Spartans answered: "Let him come and take them." The treachery of one Ephialtes having made it impossible to bar any longer the progress of the foe, Leonidas and his little band, having sent away the auxiliary force, threw themselves on the swarming myriads, and found a heroic death.

LEONISTS, a name given to the Waldenses from Leon, the German name of the city of Lyons, where they originated, and from which they called themselves the "Poor of Lyons."

LEOPARD, in zoölogy, *Felis pardus*, sometimes called the panther—"the pard" of the Elizabethan writers. It has been known from early historical times, and has a wide geographical range, being found throughout the African continent, the whole of the S. of Asia, and in Ceylon, Java, Sumatra, and Borneo. It ranks third in importance in the family *Felidæ;* varying in length from 3½-



LEOPARD

4½ feet; tail measurement 2½–3 feet, height at shoulder about 30 inches, but larger and smaller specimens have been met with. Color, pale fawn to rufous-buff, thickly studded with dark rosette-shaped spots. The leopard is fierce and blood-thirsty, often killing far more than it can devour, either from love of slaughter or for the sake of fresh blood.

LEOPARDI, GIACOMO, COUNT (lā-ō-par′-dē), an Italian poet; born in Recanati, Tuscany, Italy, June 29, 1798. His family, though noble, was poor. Before he was 18 he had produced a Latin translation of Porphyrius's "Life of Plotinus"; a treatise on "Some Roman Rhetoricians" of the 2d century, and a "History of Astronomy," both in Latin; and an "Essay on the Popular Errors of the Ancients," in Italian, citing over 400 authors. His subsequent works were: "Ode to Italy" (1818); "Ode on the Monument to Dante" (1819); "Brutus the Younger" (1823), an ode; "Verses," a collection of his miscellaneous poems (1826); "Moral Opuscules" (1827), "The Broom-Flower," "Sylvia," and "The Night Song," are his most celebrated poems. He left unpublished at his death a volume of "Thoughts." He died in Naples, June 14, 1837.

LEOPOLD I., Emperor of Germany, son of Ferdinand III., born in 1640. Destined for the Church, he was educated by the Jesuits. At the age of 15 he was crowned King of Hungary, in the following year King of Bohemia, and was elected emperor in 1658. His long reign of 49 years is marked by many events of European importance, but Leopold, personally, had little influence. There were wars with Sweden, with Turkey, with Hungary, and three with France, and the peace of Oliva, the peace of Nimeguen, the League of Augsburg, the Grand Alliance, the peace of Ryswick, and the peace of Carlowitz. The severities exercised by the emperor occasioned the junction of the Hungarians with the Turks, in 1683, and the besieging of Vienna. It was on this occasion that John Sobieski, the heroic King of Poland, interposed, won a great victory over the Turks, and saved the empire, for which Leopold gave him very cold thanks. Sobieski withdrew his army, declaring he would still fight the Turks, but never the insurgent Hungarians. Leopold then adopted more severe and merciless measures in Hungary. The war of the Spanish Succession began in 1701, and while it was still going on Leopold died in 1705.

LEOPOLD II., emperor; the second son of Francis I. and Maria Theresa; born in 1747. He became grand-duke of Tuscany in 1765, and his government was marked by wisdom and moderation. He succeeded his brother Joseph in the Austrian hereditary dominions in 1790, and the same year was chosen emperor. The Netherlands were in revolt, disaffection was growing to insurrection in Hungary and Bohemia, and the principal states of Europe were unfriendly. By wise measures he established tranquillity, recovered the Netherlands, and pleased his subjects. The French Revolution made fresh and greater difficulties. In 1791 he concluded the treaty of Pilnitz with the King of Prussia and died in March, 1792.

LEOPOLD I., King of the Belgians; born in Coburg, Dec. 16, 1790. After receiving an excellent literary and scientific education, he became a general in the Russian army, and was present at the battles of Lützen, Bautzen, and Leipsic. While on a visit to England after the peace of 1815 he won the affections of the Princess Charlotte, the heiress of the throne, married her, and was naturalized by act of Parliament in 1816. The princess died in 1817; and Leopold 12 years later married morganatically Caroline Bauer. He received in February, 1830, the offer of the crown of Greece, but declined it. In June, 1831, he was elected King of the Belgians. As a monarch he conducted himself with

great prudence, firmness, and moderation. He died Dec. 10, 1865.

LEOPOLD II., King of the Belgians; son of the preceding; born April 9, 1835. He was married in 1853 to Marie, Archduchess of Austria (born 1836), the daughter of Archduke Joseph of Austria.

LEOPOLD II. OF BELGIUM

He early manifested an interest in Africa and in 1885 he became sovereign of the KONGO FREE STATE (*q. v.*) He died Dec. 10, 1909.

LEOPOLDVILLE, a village in the Belgian Kongo, West Africa. A railroad extends from Matadi 248 miles away to this town. A pipe line of about the same length connects the two cities, and through it oil is pumped to supply fuel for steamers on the Kongo river. Pop. about 16,000.

LEPANTO (anciently Naupactus, now called by the Greeks Epakto), a small town of Greece, on the N. side of the entrance to the Gulf of Corinth. During the Peloponnesian war it was one of the chief naval stations of the Athenians. In the Middle Ages it was given by the Byzantine emperor to the Venetians, who fortified it so strongly that in 1477 it stood a siege of four months by 30,000 Turks and in 1499 was only taken by Bajazet II. at the head of 150,000 men. Near Lepanto took place the celebrated naval battle between the Turks on one side and the Papal galleys, and those of the Venetians and the Spaniards, on the other, on Oct. 7, 1571, in which the Christians, commanded by Don Juan of Austria, achieved a decisive victory. In this battle Cervantes lost an arm. The town became Greek in 1829.

LEPANTO, GULF OF. See CORINTH.

LEPIDOPTERA, an order of insects, having the wings clothed with scales implanted in the wings, with their margins overlapping other scales; it is these, and not the wings themselves, that are so gayly colored. The wings are four. The mouth consists of an antlia, or long spiral proboscis or tongue, by means of which they feed on honey in the nectaries of flowers, which is their appropriate food. They undergo a complete metamorphosis, the parent generally depositing her eggs on some plant; these being hatched as minute caterpillars, at once begin to eat voraciously, increasing largely in size, and casting their skin repeatedly. On becoming full grown they pass into the chrysalis state, emerging in due time as full-grown winged insects. Formerly they were divided into three sub-orders or tribes: Butterflies, Sphinxes or Hawk-moths, and Moths, the first having club-shaped antennæ, the second having the thickest part of the antennæ toward the front, and tapering in both directions, and the third having them, if not feathery, then, becoming gradually thinner from the base to the tip. The butterflies are the most brightly colored, and fly by day; the sphinxes, of less brilliant tints, fly during the twilight; the moths, normally of somber hue, are nocturnal. The last two sub-orders are now combined, and only two primary divisions recognized: (1) Rhopalocera, containing the butterflies; (2) Heterocera, comprising hawk-moths, and the moths. More than 50,000 lepidoptera are known.

LEPIDUS, MARCUS ÆMILIUS, a Roman statesman. In 49 B. C. he held the office of prætor, and at the outbreak of the civil war he joined the popular party. He became master of the horse, and in 46 consul with Cæsar; was at Rome at the time of the murder of the latter, and succeeded him as pontifex maximus; had the government of Narbonese Gaul, and Hither Spain; joined Antony, and was declared an enemy to the state. In October, 43, the first triumvirate was formed, and the Roman world was divided between Octavius, Antony, and Lepidus. He was again consul in 42; was made governor of Africa, after the defeat of Brutus and Cassius at Philippi; attempted afterward unsuccessfully to make himself

independent, and lost his provinces and his office. He died in 13 B. C.

LEPROSY, a disease characterized by the formation of scaly patches on the skin, of different sizes, but having always nearly a circular form. Physicians distinguish three varieties of this disease —*Lepra vulgaris*, or common leprosy; *Lepra alphos*, or white leprosy; and *Lepra nigricans*, or black leprosy. Leprosy first manifests itself in small distinct reddish elevations of the cuticle, which enlarge till they sometimes attain the size of a coin. They are covered with scales, which accumulate and form a thick prominent crust, and are quickly reproduced as they fall off. In *lepra alphos* the scale patches are smaller than in *lepra vulgaris*, and have also their central parts depressed or indented. The *lepra nigricans* differs from the others chiefly in the color of the patches, which are dark and livid. Leprosy originated in Egypt and Arabia at a very early period. It is frequently alluded to in the Scriptures; and special regulations were prescribed concerning those afflicted with it by the Mosaic law, 1491 B. C. It was known to the Greeks and Romans, and is described by Hippocrates (460-357 B. C.) and Galen (A. D. 130-200). The crusaders introduced the disease into Europe, where it raged with virulence during the Middle Ages. Since the commencement of the 17th century the disease has almost entirely disappeared from Europe, where it is now limited to the most northern and southern countries.

LEPSIUS, KARL RICHARD (lep'sē-ös), a German Egyptologist; born in Naumburg, Dec. 23, 1810. While pursuing his studies in Paris he wrote three disquisitions, which won prizes of the Academy: "Palæography as a Means of Linguistic Research" (1834); "Kinship of the Semitic, Indian, Ethiopian, Old Persian, and Old Egyptian Alphabets"; "Origin and Relationship of Numerical Terms in the Indo-Germanic, Semitic, and Coptic Languages." In his celebrated "Letter to Mr. Rossellini on the Hieroglyphic Alphabet" (1837), he propounded a scientific theory of hieroglyphic writing. His translation of the "Book of the Dead" was published in 1842. That year he visited Egypt, and for four years studied its monuments; the results of his researches are contained in the magnificent "Monuments of Egypt and Ethiopia" (12 vols. 1849–1860). He wrote for the general public "Letters from Egypt, Ethiopia, and the Sinaitic Peninsula" (1852). He died in Berlin, July 10, 1884.

LE QUEUX, WILLIAM, an English novelist; born in London, July 2, 1864. He studied art in Paris under Spiridion; entered into journalism, becoming attached to "Galignani" and Paris "Morning News"; went to London; joined staff of "Globe" in gallery of House of Commons, 1890; appointed sub-editor, 1891; resigned to devote time to novel writing, 1893. He published "Guilty Bonds" (1890); "The Great War in England in 1897" (1892); "Zoraida" (1894); "The Temptress" (1895); "A Secret Service" (1896); "Devil's Dice" (1896); "The Great White Queen" (1896); "The Day of Temptation" (1897); "In White Raiment" (1900); "The Zeppelin Destroyer" (1916), etc. British consul San Marino, 1900.

LERDO DE TEJADA, SEBASTIAN (lār'dō dā tā-hä'dä), a Mexican statesman; born in Jalapa, Mexico, April 25, 1825; appointed a judge of the supreme court in June, 1855; was Minister of Foreign Affairs for a short time two years later; member of Congress in 1861–1862 and in 1862–1863; was a companion of President Juarez in 1863–1867, during which time he was successively Minister of Justice and Minister of Foreign Affairs. He was elected chief-justice of the supreme court in December, 1867, and on the death of Juarez, July 18, 1872, he succeeded to the presidency; was elected to that post in the following November. In 1876 he was again candidate to succeed himself and after the election, which was in doubt, he was declared re-elected by Congress. This action resulted in a revolution and Lerdo was forced to leave the country. He lived in retirement in New York City till his death, April 21, 1889.

LERIDA, a town of Spain, capital of the province of Lérida on a tributary of the Ebro, 114 miles W. by N. of Barcelona, pop. about 25,000. The second city of Catalonia, Lerida has a castle and two cathedral churches, one an ancient Byzantino-Moorish edifice, now used as a barracks, the other a modern Græco-Roman building. It carries on manufactures of woolens, cottons, leather, paper, and glass. Near Lerida, the Celtiberian Ilerda, Scipio Africanus defeated Hanno (216 B. C.); and Cæsar, the lieutenants of Pompey (49 B. C.). The Goths made it a bishop's see and held here a council of the Church in the 6th century. In 1300 a university was founded here; it is now extinct. The town has been several times besieged, on the last occasion by the French in 1810.

LÉRINS (lā-ra*ng*), a small group of French islands in the Mediterranean, 2½

miles S. E. of Cannes. On Sainte-Marguérite (the ancient Lerona), 4 miles in circumference, stands a fortress in which the Man with the Iron Mask and Marshal Bazaine were at different times confined, and from which Bazaine escaped in 1874.

LEROS, a Greek island in the Ægean, off the coast of Asia Minor, 35 miles S. of Samos; length 6 miles, width 4 miles; pop. about 3,000. Cap. Leros or Marina; pop. 1,500.

LE ROUX (R. C. HENRI), known as HUGUES, a French journalist; born in Havre in 1860. In early life he was connected with the "Political and Literary Review," and subsequently succeeded Jules Claretie as writer of the Paris chronique in the "Temps." He is author of a series of popular romances, including "Médéric and Lisée" and "One of Us" (1886); "Souls in Agony" (1888); "The Parisian Inferno" (1888); "Le Fils a Papa" (1900). His miscellaneous works are: "In the Sahara" (1891); "On Board a Yacht: Portugal, Spain, etc." (1891); "Portraits de Cire," "Nos Filles," "Au Sahara," etc.

LE SAGE, ALAIN RÉNÉ (luh-säzh'), a French novelist and dramatist; born in Sarzeau, near Vannes, May 8, 1668. He abandoned law for literature, with scant success till 1707, when the comedy "Crispin His Master's Rival" was received with high public favor; as was "Turcaret" in the year 1909. His novels "The Devil on Two Sticks" (1707) and "Gil Blas" (1717) were suggested by Spanish originals. He also wrote "The Bachelor of Salamanca" and "The Life and Adventures of M. de Beauchène." He died in Boulogne-sur-Mer, Nov. 17, 1747.

LESBOS. See MITYLENE.

LESGHIANS, a Tartar people of the Mohammedan religion, inhabiting the Eastern Caucasus, and forming the chief portion of the inhabitants of Daghestan. They were among the most stubborn of the Caucasian peoples in their resistance to the Russians.

LESINA, or **LESSINA**, an island in the Adriatic, on the coast of Dalmatia, consisting of a long and narrow strip, stretching E. to W. for 40 miles, with a breadth of 2 to 6 miles, and presenting a continuous chain of hills. Wine, olive-oil, and fruit are produced. The principal town, bearing same name, is on the S. W. coast. Pop. about 15,000.

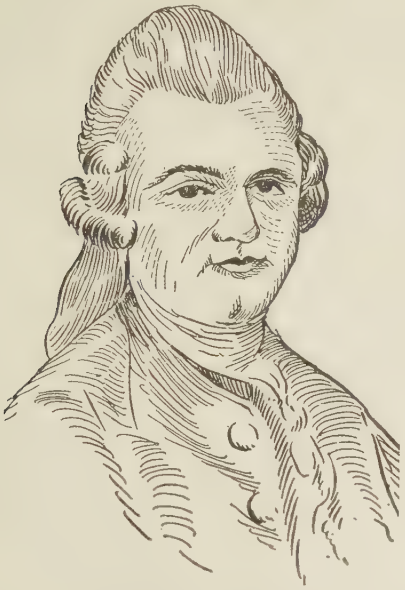
LESLEY, JOHN, a Scotch historian; born Sept. 29, 1527. A stanch friend of Mary, Queen of Scots, he was implicated in the project of her marriage to the Duke of Norfolk, and in the consequent rebellion in the N. of England, and was imprisoned in the Tower. On his release he crossed to the Continent, and subsequently became Bishop of Coutances in Normandy. His chief production is a history of Scotland (published at Rome, 1578), in 10 books, 7 in Latin and the last 3 in Scotch dialect. He died in Brussels, Belgium, May 31, 1596.

LESLIE, FRANK, an American publisher; born in Ipswich, England, in 1821; proper name, Henry Carter. At 17 he was placed in a mercantile house in London. "Frank Leslie" was the name he adopted in sending in sketches to the "Illustrated London News." In 1848 he came to the United States, where he assumed the name of Frank Leslie by a legal process, and in 1854 founded the "Gazette of Fashion" and the New York "Journal." "Frank Leslie's Illustrated Newspaper" was commenced in 1855 (German and Spanish editions later), the "Chimney Corner" in 1865; and a number of other periodicals were published by him. Died Jan. 10, 1880.

LESSEPS, FERDINAND, VICOMTE DE (les-eps), a French diplomat and engineer; born in Versailles, Nov. 19, 1805. He was employed in the French consular and diplomatic service. In 1854, on the invitation of Saïd Pasha, he visited Egypt to study the problem of canalizing the Isthmus of Suez. He was made chief director of the works in 1856. The canal was opened to traffic Aug. 15, 1869. He published (1875–1881) five volumes of "Letters, Journals, and Documents Relating to the Suez Canal"; and in 1887, "Recollections of Forty Years." His attempt to pierce the Isthmus of Panama resulted in failure and a great political scandal. He died Dec. 7, 1894.

LESSING, GOTTHOLD EPHRAIM, a German critic, dramatist, and miscellaneous writer; born in Kamenz, Lusace, in 1729. He was educated at Meissen and the University of Leipsic. His first essays in literature were dramatic compositions. In 1770 was appointed librarian to the Prince of Brunswick, at Wolfenbüttel. He made a short visit to Italy two years later, lost his wife in 1776, and later suffered a decline of health, spirits, and mental power. Lessing's great aim was to infuse a new spirit into the literature of his country, and to refine and polish its style; and he succeeded. His writings are among the classics of German literature. Among his dramatic works are, "Miss Sara Samson," "Minna von Barnhelm," "Emilia Galotti," and "Nathan the

Wise." Of his prose works may be named, "Fables"; "Literary Letters"; "Dramaturgie" (which first made Shake-



GOTTHOLD LESSING

speare really known to the Germans), and "Laocoön." He died in 1781.

LESUEUR, EUSTACHE (luh-sur'), a French painter; born in 1617. He married in 1644, and was compelled for a living to execute vignettes and frontispieces for books. His great work was the series of paintings which he executed for the Carthusian monastery in Paris in 1645–1648, delineating in 22 pictures the principal scenes in the life of St. Bruno. In 1650 he painted for the corporation of goldsmiths the "Preaching of the Apostle Paul at Ephesus." All of these are large paintings, and are now in the Louvre. He died in 1655.

LETHBRIDGE, a city in Alberta, Canada, situated on the Canadian Pacific railroad about 700 miles southwest of Winnipeg. The chief industries located in the city are the iron foundries and machine shops. Coal is found nearby, there being five large mines employing about 2000 persons and producing 4000 tons daily. Population, about 15,000.

LETHE (lē'thē), in Greek mythology, the stream of forgetfulness in the lower world, from which souls drank before passing into the Elysian Fields, that they might lose all recollection of earthly sorrows.

LETTER, a character used in printing. Type either of metal or wood. Used collectively to represent type, as "a case of letter," "a font of letter." Fat letter is type with body and face broad in proportion to its height. Lean letter is type thin or narrow in proportion to its height. Body letter is type in which the main portion of a book or paper is printed. Body letter is known by different names, according to the size of the type; the sizes in most common use being: Pearl, Agate, Nonpareil, Minion, Brevier, Bourgeois, Long Primer, Small Pica, and Pica. These sizes are also known in terms of the point system, another standard of type measurement. Thus pica is now twelve point, nonpareil is six point, etc.

A letter is, in its nature, altogether familiar; this term may be used for whatever is written by one friend to another in domestic life, or for the public documents of this description which have emanated from the pen of writers, as the letters of Madame de Sévigné, the letters of Pope or of Swift; and even those which were written by the ancients, as the letters of Cicero, Pliny, and Seneca; but in strict propriety the latter are epistles—a term more adapted to whatever has received the sanction of ages; and by the same rule, likewise, whatever is peculiarly solemn in its contents has acquired the same epithet, as the epistles of St. Paul, St. Peter, St. John, St. Jude. Letters and literature signify knowledge derived through the medium of written letters or books, that is, information; learning is confined to that which is communicated, that is, scholastic knowledge. Such an expression as men of letters, or the republic of letters, comprehends all who devote themselves to the cultivation of their minds.

LETTER OF MARQUE, the commission authorizing a privateer to make war upon, or seize the property of, another nation. Letters of marque were abolished among European nations by the treaty of Paris in 1856.

LETTOW-VORBECK, GENERAL VON, a German military officer. He was, before the World War, commander of the German forces in the Kameroons, East Africa, and was also head of the second sea battalion. During the World War, though barred from communication with Germany, he kept in the field against the British for four years. When his forces were driven from German East Africa he held his ground in Mozambique, and held his small army intact in Rhodesia at the time of the armistice.

LETTRES DE CACHET (let duh käsh-ā), the name given to the warrants of imprisonment issued by the kings of France before the Revolution. The use of *lettres de cachet* became much more frequent after the accession of Louis XIV. than it had been before, and it was very common for persons to be arrested upon such warrant and clapped into the Bastille. It was not always for political reasons that *lettres de cachet* were obtained; sometimes private persons got troublesome members of their families brought to reason in this way.

LETTS, a branch of the Lithuanian race, who in manners, customs, and mode of living do not differ much from the Lithuanians proper. They live in South Livonia, Pskov, Courland, and Vitebsk, and in the N. of Kovno in Russia. There are also colonies of them in Prussia, Brazil, and the United States. Early converted to Christianity by the Teutonic Knights, they are now mostly Lutherans, though some 50,000 have been won over to the Greek Church. In Russia they are principally engaged in agriculture and have made great progress intellectually and socially. They have a literature comprising now (1920) over 2,500 works and support 10 periodicals. Large numbers fought with the Bolsheviks in the revolution of 1917, and are represented in the army of the Soviet Republic. After the peace of Versailles in 1919 the Letts established an independent State of Latvia.

LEUCOCYTES, the name given by Robin to the lymph corpuscles, or lymphoid cells in the serous membranes of the body, and occasionally in the Malpighian cells.

LEUCTRA, a village of Bœotia, in ancient Greece, famous for the great victory which the Thebans under Epaminondas here won over the Spartan King Cleombrotus (371 B. C.).

LEUKAS, LEUCADIA, or SANTA MAURA, one of the Ionian Islands, lies close to the W. coast of Greece; about 660 B. C. the Corinthians cut through the peninsula that joined it to the mainland. It is 20 miles long by 8 wide, with an area of 110 square miles. The backbone of the island is a ridge of white limestone; hence the name (*leukos*, "white"). Wine, olive oil, and currants are the principal products. The island is much subject to earthquakes. Pop. between 25,000 and 27,000, chiefly Greeks. The W. coast is bold and precipitous, and terminates S. in the abrupt headland (200 feet) known to the ancients as the Leucadian rock, on which stood a temple to Apollo, and from which once a year a criminal was hurled into the sea by way of sacrifice. It was from the same point that Sappho, the poetess, and Artemisia of Halicarnassus threw themselves into the waves. The capital, Amaxichi or Leukas, on the E. coast, is the seat of an archbishop, and has a population of 3,800. It was nearly destroyed by an earthquake in 1825.

LEUTHEN (loi'ten), a village of Prussia, in Lower Silesia, 10 miles W. of Breslau, celebrated for the victory won there, 1757, by Frederick the Great, with 34,000 men, over the Austrians under Prince Charles of Lorraine at the head of 90,000. The result was the reconquest of the greater part of Silesia by the Prussians.

LEUTZE, EMANUEL, an American artist; born in Gmünd, Württemberg, May 24, 1816; was brought to the United States in infancy. In 1840 he began to display a remarkable talent for portrait painting. Subsequently he devoted himself to the painting of historical subjects. His works include "Columbus Before the Council of Salamanca"; "Columbus in Chains"; "Columbus Before the Queen"; "Landing of the Norsemen in America"; "Washington Crossing the Delaware"; "Washington at Princeton"; "Lafayette in Prison at Olmütz Visited by His Relatives"; etc. In 1860 he was employed by the United States Government to make a large mural painting entitled "Westward the Star of Empire Takes Its Way" on one of the staircases in the National Capitol. He died in Washington, D. C., July 18, 1868.

LEVEE (lē-vē or lev-ā'), the act or time of rising. In the United States this term is applied to any assemblage of guests, whether held in the morning or in the evening. In England the term is confined to a morning reception held by a sovereign, prince, or personage of high rank; especially the state receptions held by the sovereign. In hydraulic engineering an embankment to restrain water, and of a magnitude such as those of the Mississippi, the Ganges, Holland, and the Po.

LEVER, CHARLES JAMES, an Irish novelist; born in Dublin, Aug. 31, 1806. He was graduated in arts at Trinity College, Dublin, in 1827, and in medicine in 1831, taking his doctor's degree a little later at Göttingen. He then returned to Ireland to practice. In March, 1834, he contributed his first paper to the newly-started "Dublin University Maga-

zine," of which he became editor in 1842. The first chapter of "Harry Lorrequer" appeared in that magazine in 1837. Meanwhile he was attached as physician to the British legation at Brussels, where he practiced for three years. During his three years' editorship of the "Dublin University Magazine" he resided near Dublin, and afterwards lived on the Continent devoting himself to fiction writing —"Charles O'Malley," "Tom Burke," "Jack Hinton" are representative novels, and in a class by themselves. He obtained a diplomatic post at Florence about 1845, was appointed vice-consul at Spezzia in 1857, and in 1867 at Trieste, where he died, June 1, 1872.

LEVITE, the descendants of Levi, one of the 12 sons of Jacob (Gen. xxix: 34). Moses and Aaron were of Levite extraction (Exod. ii: 1–10, iv: 14), and when th descendants of Aaron were formally set apart to perpetuate the priesthood, the other Levites were designated as a sacred caste to assist in the work of the sanctuary (Num. iii: 5–13, xvii: 2–8). The chief branches of the Levites were the Kohathites, the Gershonites, and the Merarites (Num. iii: iv.). To these, separate functions were assigned, the more important being intrusted to the Kohathites, among whom were Moses and Aaron (I Chron. vi: 1–3). The Levites took office at 25 years old (Num. viii: 24, 25), or at 30, and had to resign at 50 (Num. iv: 3, 23, 30-39, 43–47). They were consecrated to their office (Num. viii: 5–26). They were to have no tribal territory; Jehovah was to be their inheritance (Num. xviii: 20; xxvi: 62; Deut. x: 9; xviii: 2; Josh: xviii: 7). But special cities were to be assigned to them, so scattered over the country as to enable them to render ecclesiastical and spiritual service to all the tribes (Josh. xxi.). The six cities of refuge were all Levitical cities (Num. xxxv: 1–8). They were to be supported by tithes, but themselves were to pay tithes to the priesthood (Num. xviii: 21–24, 26–32; Neh. x: 37). The Levites obtained much respect under Moses and Joshua. At the times of the judges their social position greatly declined (Judges xviii.). They revived under Samuel, but declined under Saul; David reorganized them, assigning 24,000 to assist the priests, 4,000 to be musicians, 4,000 to be gate-keepers, and 6,000 for other duties (I Chron. xxiii–xxvi.). The religious schism which followed on the revolt of the 10 tribes superseded the Levites over the whole kingdom of Israel, on which multitudes of them removed to Judah (II Chron. xi: 13, 14; xiii. 9), exerting a great influence, spiritual, social, and political, through every subsequent change, till the destruction of Jerusalem under Titus. The office of the Levites made them the intellectual as well as the spiritual caste. The only mention of Levites in the New Testament is in the Parable of the Good Samaritan (Luke x: 32).

LEVITICUS, the third book of the Pentateuch, and of the Old Testament, in the Hebrew Bible named (*Vaiyiqra*) = "And called," from its first two words. The integrity of the work is admitted by most critics, though rationalists contend that the Levitical legislation did not originate till 1,000 years after Moses, and was not carried out till after the building of the second temple.

The best commentary on the book of Leviticus is the Epistle to the Hebrews, and the other New Testament books.

LEWALD, FANNY, a German novelist; born of Jewish parents in Königsberg, March 24, 1811, but professed Christianity in her 17th year. She began to write when about 30, and from 1845 lived in Berlin; in 1855 she married Adolf Stahr (1805–1876), the literary critic. She was perhaps the most important woman novelist in Germany during the middle of the 19th century. She was an especially enthusiastic champion of the emancipation of her sex. Her best book is perhaps "From Sex to Sex" (1863–1865). An English translation of "Stella" (1884) appeared that year. Her books on Italy (1847) and Great Britain (1852) may still be read with interest. She died in Dresden, Aug. 5, 1889.

LEWES, the county-town of Sussex, England, 50 miles S. of London. Race meetings are held three times a year near Mount Harry on the Downs, where, on May 12, 1264, a great battle was fought between Henry III. and the insurgent barons under Simon de Montfort.

LEWES, GEORGE HENRY, an English critic and man of letters; born in London, April 18, 1817. In 1838 he went to Germany and studied the language and literature of the country. Returning to London he contributed to reviews, magazines, and was editor of the "Leader" (1850–1854) and the "Fortnightly," which he founded (1865-1866). His works, besides a tragedy and a couple of novels (1841–1848), include the "Biographical History of Philosophy" (1845; recast as "The History of Philosophy from Thales to Comte"); "The Spanish Drama, Lope de Vega and Calderon" (1846);

a "Life of Robespierre" (1848); "Comte's Philosophy of the Sciences" (1853), the admirable "Life and Works of Goethe" (1855); "Physiology of Common Life" (1859–1860); "Studies in Animal Life" (1862); "On Actors and the Art of Acting" (1875); and "Problems of Life and Mind" (1874–1879). Lewes was married unhappily and had children, when his connection with George Eliot began in July, 1854. Died Nov. 30, 1878.

LEWIS, the largest of the Hebrides, separated from the mainland of Scotland by a sea 30 to 35 miles wide, called the Minch. The S. portion of the island, called Harris, is in Inverness-shire, the N. and largest portion being in Ross-shire. The entire length of the island, S. W. to N. E., is 52 miles; breadth, varying from 30 miles to 5 and 10 miles; area, nearly 700,000 acres.

LEWIS AND CLARK CENTENNIAL EXPOSITION, held at Portland, Oregon, from June to October, 1905, to commemorate the one hundreth anniversary of the exploration of the Oregon country. The site, wonderfully situated with a view embracing Mt. Hood and Mt. St. Helens, covered 385 acres. The exposition included exhibits of Liberal and Industrial Arts, Forestry, Mines and Metallurgy, Oceanic Building and Horticulture. It was opened by President Roosevelt who touched a button in the White House which set in motion the fountains and machinery. The total attendance amounted to 2,545,509, and the receipts to over $7,000,000.

LEWIS, CHARLTON MINER, an American educator, born in Brooklyn in 1866. He graduated from Yale University in 1886. He took post-graduate courses at that university and at Columbia. He practiced law for several years in New York, and in 1895 became instructor in English at Yale University. He was appointed assistant professor of English language and literature in 1898, and from 1899 was Emily Sanford professor. He wrote "The Beginnings of English Literature" (1900); "The Principles of English Verse" (1906); "The Genesis of Hamlet" (1907). He was also a frequent contributor to periodicals and magazines.

LEWIS, SIR GEORGE CORNEWALL, an English statesman, born in London, April 21, 1806. A graduate of Christ Church, Oxford, with high honors, he became a lawyer, and filled three Cabinet places in rapid succession, ending with Chancellor of the Exchequer in 1855. His most enduring work is the "Enquiry into the Credibility of Early Roman History" (2 vols. 1855). His political writings, as "On the Use and Abuse of Political Terms" (1835), "On the Influence of Authority in Matters of Opinion" (1849), "On the Methods of Observation and Reasoning in Politics" (2 vols. 1852), are clarifying but too prolix. He died in Harpton Court, Radnorshire, April 13, 1863.

LEWIS, JAMES HAMILTON, a United States Senator from Illinois, born at Danville, Va., in 1866. He was educated at Houghton College and the University of Virginia. After studying law, he was admitted to the bar in 1884 and began practice in Seattle, Washington. He was elected to the Territorial Legislature and was several times candidate for governor of the State, and for United States Senator. He was elected to Congress in 1897. After serving in several capacities, he removed to Chicago in 1903. In 1908 he was Democratic candidate for governor of the State. He was elected United States Senator in 1912, but was defeated for re-nomination in 1918. He was the author of "Two Great Republics, Rome and the United States" (1913), and several works on international law.

LEWIS, MERIWETHER, an American soldier and explorer; born near Charlottesville, Va., Aug. 18, 1774. He was employed by the government with Clark to make discoveries in the N. parts of the American continent, with a view to the extension of commerce to the Pacific Ocean. In 1805 they undertook a journey for the purpose of discovering the source of the Missouri; and they passed the winter in an icy region, 4,000 miles beyond its confluence. Lewis was soon after made governor of Louisiana, and Clark a general of its militia, and agent of the United States for Indian affairs. He died near Nashville, Tenn, Oct. 8, 1809.

LEWISTON, a city of Idaho, the county-seat of Nez Perce co. It is at the junction of the Snake and Clearwater rivers, and on the Northern Pacific and the Oregon-Washington Railroad and Navigation lines. It is the center of an important mining and wheat and fruit growing district. Its industries include flour and box-making mills. It is the seat of the State normal school and a United States Weather Bureau station. It has a hospital, a public library, and other public buildings. Pop. (1910) 6,043; (1920) 6,574.

LEWISTON, a city in Androscoggin co., Me., on the Androscoggin river and

the Grand Trunk and the Maine Central railroads, 34 miles N. of Portland. The river is spanned by several bridges. The city is the trade center for an extensive farming region. Manufactures cotton and woolen goods, boots and shoes, files, trunks, ticking, burlap, furniture and brick. It is the seat of Bates College and Cobb Divinity School; has public library, city park, electric light and street railroad plants, waterworks supplied from the river, National and savings banks, daily, weekly and monthly periodicals. Lewiston was founded in 1770; incorporated in 1795, and chartered as a city in 1861, but the city government was not organized till 1863. Pop. (1910) 26,247; (1920) 31,791.

LEWISTOWN, a city of Pennsylvania, the county seat of Mifflin co. It is on the Juniata River and on the Pennsylvania railroad. It is the center of an important agricultural and mining region and its industries include foundries, furnaces, steel works, silk mills, hosiery mills, etc. It has a hospital and a public library. Pop. (1910) 8,166; (1920) 9,849.

LEXINGTON, a city and county-seat of Fayette co., Ky., on the Cincinnati, New Orleans and Texas Pacific, Chesapeake and Ohio, Louisville and Nashville and Southern railroads; 80 miles S. of Cincinnati, O. It is the trade, social, and political center of the famous "blue grass" region; is a noted horse-breeding, hemp and tobacco growing region; and manufactures flour, planing-mill products, saddlery, harness, carriages and wagons. It is the seat of Kentucky University, Transylvania University, State College, Hamilton College; and Sayre Institute; contains a Protestant Infirmary, Colored Industrial Home, St. Joseph's Hospital, National and State banks, public library, and court house. Lexington has wide and well-paved streets, electric light and street railroad plants, daily and weekly periodicals. Pop. (1910) 35,099; (1920) 41,534.

LEXINGTON, a town in Middlesex co., Mass., on the Boston and Maine railroad; 12 miles N. W. of Boston; contains the villages of Lexington, East Lexington and North Lexington; and is principally engaged in farming, dairying and market-gardening. There are a public high school, Hancock and Adams grammar schools, Tidd primary school, Cary library, electric light plant, savings bank and newspapers. Lexington was settled in 1642 and was long known as Cambridge Farm, and was incorporated as a town in 1713. It was the scene of the first conflict between the colonists and British troops in the Revolutionary War, on April 19, 1775. The British obtained the advantage and destroyed the stores of the colonists, but lost in the action 273 men killed and wounded. Pop. (1910) 4,918; (1920) 6,350.

LEXINGTON, a city and county-seat of Rockridge co., Va.; on James river, and the Baltimore and Ohio, and the Chesapeake and Ohio railroads; 48 miles W. of Lynchburg. It is the seat of Washington and Lee University and the Virginia Military school; is engaged in agriculture and has deposits of sulphur ore, electric light plant, waterworks supplied by mountain streams, and National and State banks.

LEYDEN (lī'den), a city on the Rhine, in South Holland; practically composed of small islands, which are connected by at least 150 bridges. It contains a university, founded by the Prince of Orange in 1575, which was at one time one of the most celebrated in Europe. Among its pupils were Descartes, Arminus, Grotius, Goldsmith, and others. It has a valuable library of over 100,000 volumes, with 14,000 MSS., of which about 2,000 are Arabic, besides many scientific collections. Printing was formerly one of its chief industries. Pop. about 60,000.

LEYDEN, JOHN, a Scotch Orientalist; born in Denholm, Sept. 8, 1775. Soon after obtaining his medical degree he went to India, where his proficiency in Oriental and especially Indo-Chinese languages led to an appointment as Professor of Hindustani at Fort William College, Calcutta. He is the author of "An Historical Account of Discoveries in Northern and Western Africa" (1789), "Scenes of Infancy," a poem; and a number of Scotch ballads, which were much admired by Sir Walter Scott and others. He died at Batavia, Java, Aug. 28, 1811.

LEYDEN JAR, a glass bottle having its interior coated with tin foil or filled with thin leaves of copper or of gold leaf. The outside is also coated with tin foil up to a certain distance from the neck. The neck has a cork, through which passes a brass rod terminating at one end in a knob, and communicating with the metal in the interior. The inner coating is called the internal, and the outer one the external armature or coating. It is charged by connecting one of the armatures with the ground and the other with the source of electricity. If the hand grasps the external coating while the knob is presented to the conductor of the machine, positive electric-

ity accumulates on the inner, and negative electricity on the outer coating. If, on the contrary, the jar be held by the knob and the outer coating be presented to the machine, positive electricity is accumulated on the outer, and negative on the inner.

LEYTE (lā'tā), an island of the Visaya group in the Philippines; between Samar, Dinagat and Mindanao on the S. E., Bohol on the S. W. and Mashete on the N. W.; area, 2,722 square miles; pop. about 360,000; capital, Tacloban on the Bay of San Pedro and San Pablo. It is about 100 miles long and 47 miles wide in its broadest part. The interior of the island is mountainous, containing a number of extinct volcanoes. There are mines of gold, silver, lead and sulphur. The large valleys are cultivated by the natives, the chief agricultural product being hemp. Sugar, chocolate, coffee, and corn are also raised, and some live stock. Wax, honey, shells, birds' nests, sponges, and pearls are exported in small quantities. Civil government was established in 1901, which was found to be generally acceptable by the people but in 1905–1906 there were local disturbances. Besides the capital, the chief ports are Carrigari on the E. coast and Ormoc, Baybay, Ilongos, Ma-asim, and Malitbog on the W. coast.

LHASSA, the capital city of Tibet, and residence of the Grand Lama. The city is circular, 2½ miles in circumference, and occupies an open level plain surrounded by mountains. It has numerous towers, bazaars, and temples. The city is remarkable for the number and size of its monasteries, which are greatly resorted to by the Chinese and Mongols as schools of the Buddhist religion and philosophy. It is the "Rome of Buddhism." Pop. about 10,000. Priests, students, etc., 15,000. The annual gathering of lamas number about 80,000.

LIABILITY OF EMPLOYERS. See EMPLOYERS' LIABILITY.

LIAO-TUNG, a peninsula east of the river Liao, in Manchuria, China, on which the port of Newchwang is situated. The region projects into the Yellow Sea between the Gulf of Liao-tung and that of Korea. The name is generally used to denote the peninsula alone.

LIBATION, a sacrifice, by an actual drink offering, by pouring liquids—usually oil or wine—on the ground in honor of a divinity, or by the combination of both methods. In classic times bloody sacrifices were usually accompanied by libations, which always formed part of the religious ceremonies at a treaty of peace; hence the Greek *spondai* = a solemn treaty, from *spendō* = to offer a libation. (See Verg., Æn. v: 77; xii: 174). Libations were usually of unmixed wine (*enspondos* = *merum*), but sometimes of milk, honey, and other fluids, either pure or diluted with water (Plin., H. N. xiv: 19). The word "libation" does not occur in the Authorized Version, but clear traces of the practice may be found. "Jacob set up . . . a pillar of stone, and he poured a drink offering thereon and he poured oil thereon" (Gen. xxxv: 14).

LIBAU, a seaport of Latvia, on the Baltic; 146 miles W. by S. of Riga. It possesses a fine harbor, admitting vessels that draw 17 to 23 feet, and free from ice except for less than 14 days in the year. Its exports consist of grain, linseed and linseed oil-cake, petroleum, eggs, spirits, flax, hemp, etc. Since 1872 Libau has important railroad connections with Moscow, Kharkov, and other cities. It possesses a naval cathedral, shipbuilding yards, and a school of navigation. The industries include iron founding, brewing, oil-pressing, etc. Libau is much frequented as a seaside resort. One of the churches contains an organ (1886), one of the largest in the world. Pop. about 90,400. An ice-free naval port was constructed here at enormous cost (1893–1904). In the World War, Libau suffered great damage from the attacks of the German armies.

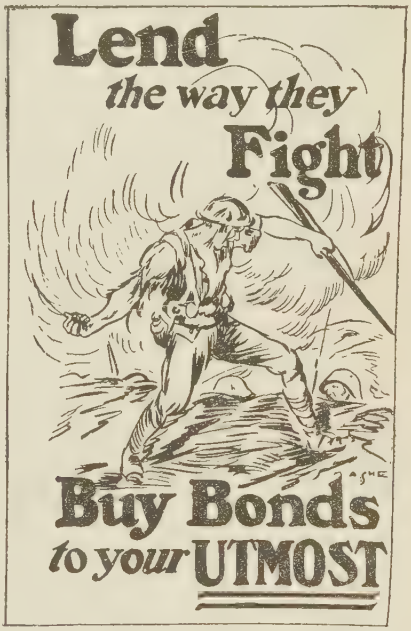
LIBERAL, a name given to that party in England which is opposed to the Conservative party. The designation "Liberal," applied to a political party in England, is said to have been derived from the "Liberal," a periodical set on foot by Lord Byron and his friends. Both political parties are named with tacit reference to an irresistible movement toward democracy long in progress in Great Britain. The Conservatives, dreading the effect of this democratic current on the time-honored institutions of the country, make it their main object to conserve them. The Liberal party, on the contrary, little or nothing fearing the results of change, help the movement instead of attempting to stem or lessen its progress. The Liberal party in English politics consists of two great sections or wings, generally in cooperation though sometimes in antagonism. These are the Whigs and the Radicals, the former seeking to remove the more obnoxious defects in the institutions of the country, with the view of insuring their stability; the latter, on the

contrary, desiring to root some of them up instead of increasing their efficiency. The Liberals were divided on the question of the Boer War (1899–1901) and formed two wings of the party. There have been other divisions on public questions. After the Peace of Versailles and in subsequent elections the Liberals lost heavily to the Conservatives and Labor Parties.

LIBERAL REPUBLICAN PARTY, a party organized in 1872 by Republicans who were dissatisfied with General Grant's first administration as President. At a convention held by them in Cincinnati, in that year, Carl Schurz was elected its president, and a platform adopted demanding civil service reform, local self-government, and universal amnesty, recognizing the equality of all men, recommending the resumption of specie payment, etc. Horace Greeley and B. Gratz Brown were named for President and Vice-President. This platform and these nominations were adopted by the regular Democratic convention of that year, but dissensions arose, and other candidates were nominated, the result being that the Republican nominee, General Grant, was elected by an overwhelming majority and the Liberal Republican Party was thereafter practically dead.

LIBERIA, a negro republic on the W. coast of Africa, founded in 1822 by liberated American slaves under the auspices of the American Colonization Society, and recognized as an independent state in 1847. It lies between the rivers Cavally and Manna, has 350 miles of seaboard, and extends some 200 miles inland; area about 40,000 square miles. The soil is fertile, well-watered, and highly adapted to the cultivation of all tropical products. The chief crop is coffee, increasing quantities of which are grown from year to year and exported, other exports being palm-oil, groundnuts, caoutchouc, and ivory. The climate is very unhealthful for Europeans. British weights, measures, and moneys are mostly in use. The English language predominates among the governing class, churches and schools are provided, and civilization is making rapid strides among the natives. The population consists of some 20,000 immigrants from the United States and their descendants, and about 1,500,000 natives; Monrovia is the capital. The government of the republic is on the model of the United States. In consequence of boundary troubles and other difficulties, the Government of Liberia appealed to the United States for help in 1908. Since that year the customs have been administered by an international committee headed by an American. Liberia declared war against Germany in August, 1917. In April, 1918, a German warship bombarded Monrovia, sinking the "President Grant," a Liberian gunboat, and killing 10 people.

LIBERTINE, a Flemish sect of Antinomians, who called themselves "Spirituals." They passed into France, where they were patronized by Margaret of Navarre, sister of Francis I. They held that, as God was the author of all human action, no human action could be evil; that religion consisted in union



LIBERTY LOAN POSTER, BY ASHE

with God by contemplation, and that any one who had attained to this could act as he pleased. Calvin wrote strongly against them.

LIBERTY, a state of freedom or liberty, abridged only by the restrictions and regulations established under the form of laws for the protection and interests of the nation, society, or state. It is a state of exemption from the arbitrary will of others, secured by established laws, by which each member is protected against injury on the part of others.

Liberty of the press, the free right and power to publish whatever one pleases, subject only to punishment for abuse of

that freedom by publishing anything mischievous, hurtful, or libelous, to the public or to individuals.

Liberty-pole, a flag-staff surrounded with the symbols of liberty. Moral liberty, that liberty of choice which is essential to moral responsibility. Natural liberty, a state of exemption from the restraint or control of others, and the institutions of civil life. The power to act or do as one pleases, subject only to the laws of nature. Political liberty or freedom of a nation; exemption of a nation from any unjust abridgment of its rights and independence by another nation. Religious liberty, the free right to hold what opinions one pleases in religious matters, and to worship the Deity according to the dictates of conscience, free from external control.

LIBERTY LOAN POSTER, BY SCOTT WILLIAMS

LIBERTY BONDS. See LIBERTY LOANS.

LIBERTY LOANS. When the United States declared war against Germany funds were required on an extensive scale and besides new taxes the method of Liberty Loans was adopted. Congress in April, 1917, authorized the borrowing of $7,000,000,000, of which three billions were to be used for investment in the war bonds of the Allies. Then Mr. McAdoo, Secretary of the Treasury, announced the offering of the First Liberty Loan. This was to consist of $2,000,000,000 of 30-year 3½ per cent. bonds, exempted from Federal and State taxes except the Federal inheritance tax. The Federal reserve banks were enlisted as agencies in their respective districts. Every kind of method for advertising the loan was utilized. The total subscription amounted to $3,035,000,000, and most of the reserve districts exceeded their allotment. The subscriptions for the Second Liberty Loan were opened on Oct. 1 and closed Oct. 27. The amount authorized was $3,000,000,000. Plans for paying by installments were arranged, with the result that the total subscriptions were $4,617,532,300.

The Third Liberty Loan was launched on April 6, 1918, and the campaign continued till May 4. The amount subscribed totalled $4,176,516,850, so that the loan was nearly half oversubscribed. The bonds of this loan become due in 1928, bearing 4¼ per cent., but are not convertible as in the case of the First and Second Liberty Bonds. The greatest success of all was the Fourth Liberty Loan, the campaign for which was carried on from Sept. 28 to Oct. 19. In all $6,989,047,000 was raised, something like $9,000,000 worth of advertising matter was sent out, and a total of 21,000,000 are said to have participated in the subscription. The bonds become due in 1938 and are collectible in 1933. The Fifth Loan was launched toward the spring of 1919. The bonds in this loan

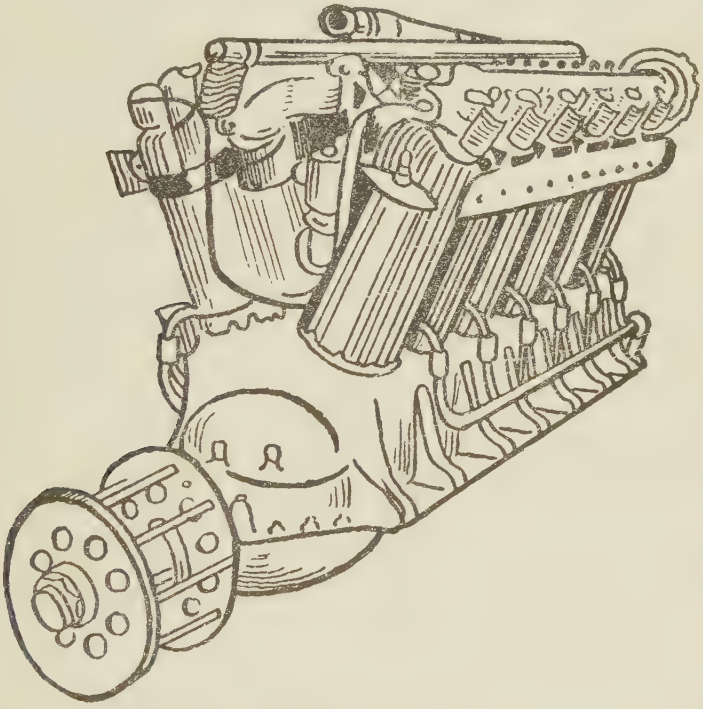
bear interest at 4¾ per cent. The campaigns for all these loans were carried on with many spectacular features and the progressive interest aroused was indicated in the increasing number of subscribers.

LIBERTY MOTORS, the name applied to types of internal combustion engines produced under the direction of the United States Government during the time of the World War.

There is a widely current impression that the Liberty motor was designed during a five day conference held in Washington in the early part of the war. As a matter of fact, it was a further development and refinement of a motor which had been made by the Packard Motor Company of Detroit. Early in the war Mr. Henry Joy, then President of the Packard Company, became convinced that the United States would be drawn into the struggle, and he realized that this country was entirely unprepared to produce a satisfactory airplane motor, so at his instigation the Packard Company began experimentation, and produced several preliminary models which were tested and successfully used in special motor car bodies.

At the beginning of the war the Packard Company offered all the results of its experimentation to the government free of charge, although it had cost the Packard Company almost $400,000. In order that no one company should determine the policy of the government for the production of airplane motors, a conference was called in Washington between Mr. J. G. Vincent (afterward Colonel), chief engineer of the Packard Motor Company, and Major E. J. Hall of the Hall-Scott Company, in which conference the plans of the Packard Company were studied, suggestions for improvements made, and finally, upon the basis of the Packard's one and one-half years of experimentation, and with the co-operation of almost every American motor builder and automobile manufacturer, plans for the motor were agreed upon. On the receipt of telegraphic instructions, the Packard Company began work upon its first model of the new motor, which was delivered in Washington on July 4, 1917, announced to the public, and christened the Liberty Motor.

It was deemed more advisable to build the Liberty motors in the then existing shops rather than build new plants for



LIBERTY MOTOR

their production, and in many plants the manufacture of motors for motor cars gave way to the production of Liberty motors or their parts, and many other plants produced the tools, jigs, and other fixtures necessary for the quantity production of these motors.

Up to the time of the Armistice, the government had let contracts for about 100,000 airplane motors, of which number about 60,000 were to be Liberty motors.

The first Liberty motor built upon the quantity production basis was shipped from the Packard plant on Thanksgiving Day, 1917, and quantity production was so well organized that by the time of the armistice, the government had accepted 15,000 Liberty motors, the daily production being over 150, while England was after four years producing Rolls Royce engines at the rate of but 59 a day. Since this country was the only one of the powers which was producing airplane motors faster than it was producing airplanes, the planes of the other nations were designed to take our motors.

Among the larger contractors were the Packard Company and the Lincoln Motor Company, which had each a contract for 6,000 motors, the Ford Company with a contract for 5,000, Nordyke and Marmon for 3,000, and the General Motors for 2,000.

The early designs called for an eight cylinder motor, but demands from France caused the plans to be changed, and most of the motors built were twelve cylinder models, which weighed about 825 pounds and developed as high as 480 horse power, its weight being less than two pounds per horse power, which is considered very light.

The original motors were tested at the summit of Pike's Peak, and in a special vacuum room at the Bureau of Standards, both of which preliminary tests were passed satisfactorily.

The Liberty motor is a twelve cylinder, V-type motor of five inch bore by seven inch stroke, with a cubic capacity of 905 inches. The angle between the cylinders is 45°, which produces a rigid motor, and offers less resistance to the air than the generally used 60° angle. The motor is made up of individual steel cylinders. Until this motor was introduced, this country had not manufactured many successful steel cylindered motors, cast iron being the usual material. The early cylinders were bored from steel castings, which was a slow and expensive process, but the Ford Motor Company soon introduced a method of forging the cylinders out of seamless steel tubing, which by means of cylinder presses and bulldozers can be converted into a headed and flanged cylinder blank at small expense and with great rapidity. The cylinders are fitted with a stamped steel jacket which is welded to the cylinder. Because of the unequal thickness of the metal in the cylinder, and the jacket, difficulties were experienced in the welding of the parts because of the unequal heating, but they were overcome by raising joining flanges upon the heavier cylinder, to which flanges the jacket was welded.

Ignition caused some difficulty, and various types of magnetos and ignition devices were experimented with before a specially designed Delco system was used. The pistons of the Liberty motor are of Hall-Scott design, the connecting rods are of the forked type such as were first used in America by the Cadillac, the crank shaft is a standard twelve-cylinder type except for the special oiling devices. A special pump pressure oiling device is used. The water is kept in circulation by a pump developed by the Packard Company, a special carburetor was designed for this motor, and the shaft drive was developed by the Hall-Scott Company. There is one cam shaft for each set of cylinders. The valves are set in the head of the motor and are operated by a mechanism more or less resembling that of the German Mercedes. The inlet valves of the motor are on the inside, in order that the travel of the gas may be shortened, while the exhaust valves are located on the outside.

The motor was subject to the most severe tests, and may be cited as a great triumph of American engineering and methods.

LIBERTY PARTY, THE, in the United States, grew out of the Anti-slavery Society, and was more widely known for the persistent agitation of its adherents than for its numbers. In 1840 it nominated James G. Birney, secretary of the Anti-slavery Society for president, casting 7,059 votes; and again, in 1844, when he received 62,300 votes. It contained such men as William Lloyd Garrison, Wendell Phillips, Lewis Tappan, Gerrit Smith, Samuel Lewis, and Salmon P. Chase. It merged into the Free Soil party in 1848.

LIBITINA, the Roman goddess of the dead and of funerals.

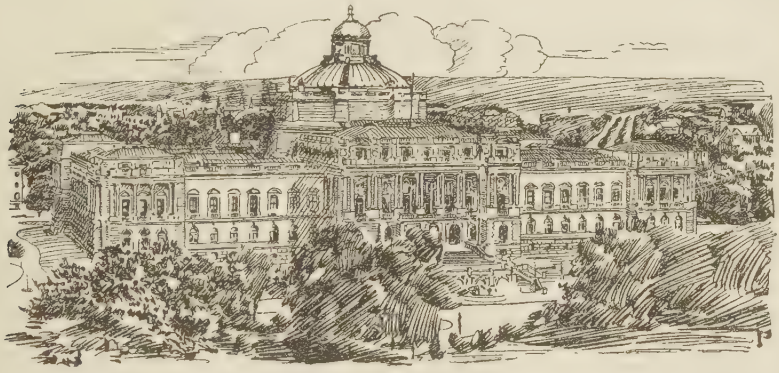
LIBRA, one of the 12 ancient zodiacal constellations. It is surrounded by the constellations Scorpio, Ophiuchus, Virgo, Centaurus, and Lupus. It contains no stars of the first magnitude. Also the 7th sign of the zodiac. Owing to the

precession of the equinoxes it now contains the constellation Virgo. The sun enters it about Sept. 23.

LIBRARY, the name given to a collection of books, and to the building in which it is located. Libraries existed in ancient Egypt and Assyria, and Pisistratus is credited with the honor of introducing a public library at Athens about 337 B. C. By far the most celebrated library of antiquity was the Alexandrian. In the West libraries of note were founded in the second half of the 8th century by the encouragement of Charlemagne. In France one of the most celebrated was that in the abbey St. Germain des Prés, near Paris. In Germany, the libraries of Fulda, Corvey, and in the 11th century that of Hirschau, were valuable. In Spain, in the 12th century, the Moors had 70 public libraries, of which that of Cordova contained 250,000 volumes. In Britain and Italy libraries were also founded with great zeal, particularly in the former country, by Richard Aungerville; in the latter by Petrarch, Boccaccio, and others. After the invention of the art of printing this was done more easily and at less expense. The principal libraries of modern times are the national library at Paris, with nearly 2,300,000 books and 10,000 MSS., and the British Museum library, London, with over 1,500,000 books and 100,000 MSS. The central court library at Munich, the imperial library at St. Petersburg, and the royal library at Berlin have each over 1,000,000 volumes and thousands of MSS. Other large and valuable libraries are the imperial library at Vienna; the royal libraries at Stuttgart, Dresden, and Copenhagen; the university libraries of Genoa, Prague, Göttingen, Upsala, Oxford, Cambridge, and Dublin; also the libraries of Moscow, Venice, Florence, Milan, Bologna, Naples, and the Advocates', Edinburgh. The Vatican library, Rome, and the Bodleian, Oxford, are particularly valuable for rare books and MSS. The spread of education developing a taste for knowledge, has led all highly civilized nations to establish extensive Public Library systems consisting of small libraries easy of access for the people, each provided with books that are most in demand in that section of the country. The Public Library system of the United States may be said to extend to every corner of the country. By means of the Dept. of Traveling Libraries books are provided for persons living in remote country districts.

LIBRARY OF CONGRESS. See CONGRESS, LIBRARY OF.

LIBRETTO, the book of an opera. Among the most noteworthy librettists have been Metastasio, Calzabigi, and Felix Romano in Italy; Quinault, Marmontel, Scribe, Barbier, Meilhac and Halévy, as well as Sardou, in France; the poet Geibel (who wrote "Loreley" for Mendelssohn), and Schikaneder (who wrote the "Zauberflöte," etc., for Mozart) in Germany; and Gay, Alfred Bunn, Edward Fitzball, Theodore Hook, Planché, and Gilbert in England. Wagner stands alone, in that, after the "Flying Dutchman," he himself wrote the librettos of his great music-dramas.



LIBRARY OF CONGRESS, WASHINGTON, D. C.

LIBYA, the name given by the oldest geographers to Africa. In Homer and Hesiod, it denoted the whole of this quarter of the globe, except Egypt; in Herodotus, occasionally, the entire continent; but it is also applied by others to the N. part of the country, from Egypt and the Arabian Gulf W. to Mount Atlas. The great sandy tract of which the Sahara forms the principal part, was called the Libyan Desert.

LIBYA ITALIANA, the Italian possessions in north Africa, which include what was, before 1911, the Turkish province, or vilayet, of Tripoli, and Cyrenaica, the former Mutessarifat of Bengazi. The territory lies between the Libyan Desert on the E. and Tunis on the W. On account of the indefinite boundaries with the desert the area can only be approximately given at from 1,000,000 to 1,500,000 square kilometers. This territory was taken from the Turks by the Italians after the Turkish-Italian War of 1911, after which only the spiritual authority of the caliphate was recognized, according to the Treaty of Lausanne.

LICHENS (lī'kens), familiar plants which form incrusting growths on rocks and stones, on the stems and branches of trees, on walls and fences, and on the earth itself. They are common in every zone, and at all levels from the seashore to the mountain summit. They are hardy, long-lived plants, able to survive prolonged dessication.

LICHNOWSKY, PRINCE, a German diplomat. After long experience in serving various German embassies abroad he became in 1911 Ambassador to Great Britain. During the serious crisis caused by the Balkan War he handled German relations with England in such a way as effectively to promote peaceful relations between the two nations. He was unable however to prevent the clash of war in 1914 and was handed his passports in August of that year. In March of 1918 a copy of a memorandum made by himself for his own private defense and justification reached the public. His bitter criticism of German diplomatic methods and his exoneration of Sir Edward Grey, British Minister of Foreign Affairs, brought him into great unpopularity in Germany.

LICHTENBERG, a suburb of Berlin, Germany, situated to the E. of the capital and possessing many handsome residences. Many of the important charitable institutions of Berlin have their buildings here. Its industries include those dealing with the manufacture of pharmaceutical implements, leather goods, carpets and pianos. Pop. about 82,000.

LICINIUS, CAIUS, a Roman tribune; of a plebeian family, he rose to the rank of tribune. He made a law, which allowed the plebeians to share the consular dignity with the patricians; and he himself became one of the first plebeian consuls, 364 B. C.

LICK, JAMES, an American philanthropist; born in Fredericksburg, Pa., Aug. 25, 1796. In 1819 he was employed in a piano factory in Philadelphia, and a year later started in the same business for himself in New York, and South America. In 1847 he emigrated to California, and investing in real estate made a fortune. In 1874 he placed his entire property in the hands of trustees, to be devoted to public and charitable purposes. The total amount thus given was $1,765,000, of which $700,000 was for LICK OBSERVATORY (*q. v.*), to be connected with the University of California, $150,000 for free public baths in San Francisco, and $540,000 for an institution to be called the California School of Mechanical Arts. For himself he reserved $500,000, gave his son $150,000, and each of his relatives sums varying from $2,000 to $5,000. He died in San Francisco, Cal., Oct. 1, 1876.

LICK OBSERVATORY, an astronomical station; on the summit of Mount Hamilton, Santa Clara co., Cal.; erected through the liberality of James Lick, the testator imposing in the trust-deed the obligation of erecting "a powerful telescope, superior to and more powerful than any telescope yet made." In 1881 the trustees contracted with Alvan Clark & Sons for "an achromatic astronomical object-glass of 36 inches clear aperture" (this being the largest the Clarks would venture to contract for), to be delivered Nov. 1, 1883. The price was $50,000. The flint glass disk was successfully cast by Feil & Sons, Paris, France, early in 1882. Its companion, the crown-glass disk, was cast and ready for shipment at the close of 1882, but the material was so brittle that it unfortunately cracked in packing. The difficulties attending the casting of the crown disk were extraordinary, and it was not till 1886 that success crowned the efforts of the Messrs. Feil. This monster object-glass safely reached Mount Hamilton, and was mounted early in 1887. James Lick reserved for himself the selection of a suitable site for the observatory destined to bear his name. After considerable deliberation and frequent consultation with good authorities Mr. Lick selected as a site for the observatory, Mount Hamilton. The telescope was put into use early in 1888. The column is of cast iron, 10x17 feet at the base, and 4x8 feet at the top, and weighs 20 tons. On this rectangular column rests the head, weighing four tons, in which is journaled the polar axis. Around this head is a balcony, on which the assistant astronomer is stationed. By a system of wheels he is able to adjust the instrument on any star desired, and read its position by microscopes, illuminated by

electric light. The polar axis is of steel, 12 inches in diameter, 10 feet long. The declination axis is also of steel, is 10 inches in diameter, 10 feet long. The tube is of steel, 57 feet long. Its diameter is 4 feet at the center, tapering toward each end to 38 inches. This is made to follow the star by means of a driving-clock, weighing one ton, controlled by a double conical pendulum which is placed near the top, and within the column, and is reached by a landing from the spiral staircase. At the side of the great tube three small telescopes of 6-inch, 4-inch, and 3-inch apertures are attached, which serve as finders. The magnifying power ranges from 180 to 3,000 diameters. The object-glass is 36 inches clear aperture, and weighs, with its cell, 532 pounds. By special accessories, the telescope is adapted to spectroscopic, photographic, and micrometric work. The center of motion is 37 feet above the base and when the telescope is pointed to the zenith the object-glass is 65 feet above the base of the column. When turning the instrument in declination the weight that is put in motion is seven tons, and when turning it in right ascension 14 tons is being moved. The total weight of the instrument is 40 tons.

LIDDELL, HENRY GEORGE, an English lexicographer, born in 1811. He was educated at Charterhouse and Christ Church, Oxford. He was made tutor of his college, and in 1845 Professor of Moral Philosophy in his university. After acting for nine years (1846–1855) as head-master of Westminster School, he returned to Christ Church as dean. From 1870 to 1874 he was vice-chancellor of the university. "Liddell and Scott's Greek Lexicon" (1843: 7th and definite ed. 1883) was based on the German one of Passer. It soon became indispensable to every serious student of Greek, and an edition was issued for schoolboys. Dr. Liddell's collaborator was Robert Scott, D. D. (1811–1887), master of Balliol College (1854–1870). Dr. Liddell was the author of a "History of Rome" (1855). He died Jan. 18, 1898.

LIE, JONAS, an American artist, born in Norway in 1880. He removed to America in 1893 and graduated from the Ethical Culture School in 1897. He studied designing at the National Academy of Design; and at the Art Students' League, New York. His pictures are exhibited in nearly all important museums in the United States. He received the first Hallgarten Prize from the National Academy of Design, in 1914.

LIEBIG, JUSTUS, BARON VON (lē'big), a German chemist; born in Darmstadt, May 12, 1803. In 1826 he was appointed Professor of Chemistry in the University of Giessen, and there set up the first chemical laboratory for experimental instruction. His treatises and memoirs on theoretical and practical chemistry are very numerous, and are of exceptional value. Among his writings on the chemistry of agriculture are "Principles of Agricultural Chemis-

BARON VON LIEBIG

try" (1855); "Theory and Practice of Farming" (1856); "Scientific Letters on Modern Farming" (1859). He died in Munich, April 18, 1873.

LIEBKNECHT, KARL, a German Socialist leader, born in Leipzig, in 1871. He was a son of William Liebknecht, the leader of the German Social Democratic Party. He was educated in the German universities and afterward studied law. He became prominent in the Socialist Party and was elected to the lower house of the Prussian Diet in 1908. Four years later he became a member of the Reichstag. At the outbreak of the war, and during its continuation, he opposed the war policy of Germany. Although he at once voted war credits, he soon refused to do so and was thrown into prison. He had previously suffered a term of imprisonment for the publication of an anti-militaristic pamphlet in 1907. In 1915 he was called to the colors and served in the Labor Battalion. Whenever opportunity afforded, he undertook to obstruct the course of busi-

ness in the Reichstag. He was expelled from the Socialist Party in 1916 and was expelled from the Reichstag in the same year, following an attack on the Government's financial policy. A few weeks later he was seized on a charge of attempting high treason and was sentenced to four years penal servitude, expulsion from the army and loss of civil rights. After the end of the war he became the leader of the Spartacist group of agitators which opposed the new government. He was arrested and together with Rosa Luxemburg was being conveyed to Berlin in an automobile when both were shot and killed, Jan. 15, 1919.

LIECHTENSTEIN (lēht'en-stīn), an independent principality of Europe, separated from Switzerland on the W. by the Rhine; on the E. it is bounded by Vorarlberg; area, 61 square miles. It is a mountainous district made up of the lordship of Vaduz and the countship of Schellenberg. The chief town, Liechtenstein, formerly called Vaduz, is 28 miles S. S. W. of Bregenz on Lake Constance. The inhabitants carry on agriculture, rear cattle, and cultivate the vine. They are exempt from military duty. Liechtenstein, with several other small States, formed the 15th member of the German Confederation till its dissolution in 1866; but in the Plenum, or full Council of the Diet, it had a separate vote. The Prince of Liechtenstein possesses extensive estates in Austria, Prussia, and Saxony. The little State was, until the establishment of the Austrian Republic, a constitutional sovereignty, ruled by the prince and a legislative assembly. On Nov. 7, 1918, the Diet passed a resolution making Liechtenstein an independent State. Pop. about 11,000.

LIÈGE, a city of Belgium, capital of province of same name, 54 miles S. E. of Brussels, on the Meuse, at the influx of the Ourthe. It is an important stronghold, being surrounded by a circle of forts. The Meuse divides the city into the old town and the new town, the former on the left bank containing the citadel and principal public buildings, the latter numerous manufacturing establishments. The chief center is the Square d'Avroy, and the chief edifices include the Churches of St. Jacques, St. Paul, St. Croix, St. Barthélemy, St. Martin, St. Denis, Academie de Beaux Arts, Théâtre Royal, Palais de Justice, and town hall. Has university with 2,000 students and 20,000 volumes. Is center of rich coal district, some of the mines being under the city streets. Has large artillery works, and machine mills. Industries very varied, and the city is seat of active commerce. It was the first considerable town in the way of the Germans when they invaded Belgium in August, 1914. The first infantry attack was made on August 5, and the Germans were in the town on August 8, the forts around the town being later battered down by the big guns from the Austrian foundries at Skoda. The city remained in German hands till the end of the war. Pop. about 175,000.

LIEGNITZ, a town of Prussian Silesia, on the Katzbach, 38 miles W. by N. of Breslau. The town dates from the end of the 10th century. In 1163 it was chosen by the Dukes of Lower Silesia as their place of residence, and from 1241 to 1675 it was the capital of the principality of Liegnitz. Liegnitz came into the hands of Prussia in 1742. Here in 1760 Frederick the Great routed the Austrians under Laudon, and in 1813 Blücher defeated the French (Katzbach). It is now a place of great and varied industrial activity; iron-foundries, and machine-shops, pianoforte-factories, and manufactures of woolens, cloth, hats, and gloves, with turnery, brick-making, and pottery, indicate the chief branches. Pop. about 67,000.

LIEUTENANT-GENERAL, a general officer in the army, ranking above a major-general and below a general. The office of lieutenant-general was first created by Congress for George Washington in 1798, during the troubles between the United States and France. It then lapsed till renewed by Congress for Gen. Winfield Scott, who was made lieutenant-general by brevet. In 1864 it was again revived for Gen. U. S. Grant, and continued for Generals Sherman and Sheridan. The grade was also conferred on Gen. John M. Schofield, Feb. 5, 1895, who held it till his retirement, Sept. 29, following. An act of Congress of June 6, 1900, provided that "the senior major-general of the line commanding the army shall have the rank, pay and allowances of a lieutenant-general"; and on the re-organization of the army in February, 1901, the grade was revived and President McKinley appointed Maj.-Gen. Nelson A. Miles its incumbent. In June, 1903, the rank was abolished by act of Congress, which provided for a General Staff, Chief of Staff taking the place of lieutenant-general. During the World War the grade was revived. Hunter Liggett and Robert L. Bullard were appointed lieutenant-generals.

LIFEBOAT, a boat specially constructed for saving life in storms and heavy seas, when ordinary boats could not attempt to do so, except at imminent

peril or certain death to those within them. The qualities necessary in a lifeboat may be thus summed up: Extra buoyancy, self-discharge of water, ballasting, self-righting, stability, speed, stowage-room and strength of build.

36-FT. SELF-BAILING AND SELF-RIGHTING LIFEBOAT

LIFE BUOY, a buoy or float which is thrown overboard to sustain a person till assistance arrives.

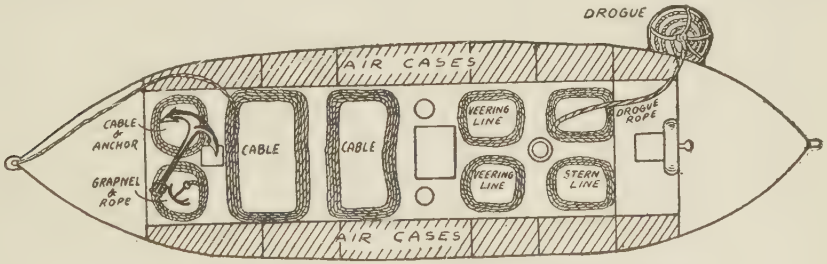
LIFE GUARD, the guard of a sovereign's person; a king's body guard. In the British army the name of life guards is given to two cavalry regiments of the Household Brigade.

LIFE INSURANCE. See INSURANCE.

LIFE PRESERVER, one who, or that which, preserves, or is intended to preserve, life; specifically, (1) a contrivance to enable a person to float in water in case of accident; a cork-jacket or inflatable belt or waistcoat are ordinary devices for this purpose. They are principally made of cork, in the form of jackets and belts, or of india-rubber cloth belts or cylinders, which, when inflated, are able to sustain a person above the surface of the water. The term life preserver has also been applied to a small weapon, about a foot long, made of twisted whalebone, and heavily loaded at each end.

LIFE ROCKET, a rocket discharged from a life mortar; it carries a line intended as the means of opening communication between a ship in distress and those on shore.

LIFE-SAVING SERVICE, a branch of the Treasury Department of the United States Government. The first stations of a life-saving service were established by the Massachusetts Humane Society at Lovell's Island and Cohasset. All efforts for saving life and property in cases of shipwreck were made by this society till 1837, when the President of the United States was authorized to employ ships to cruise along the shores and render assistance to distressed navigators. William A. Newell, afterward Governor of New Jersey, witnessed a fearful shipwreck off Barnegat Island, and when elected to Congress in 1848 he introduced a bill for the relief of shipwrecked persons. The result of the passage of this bill was the placing of a few live-saving stations between Sandy Hook and Little Egg Harbor, N. J. From this beginning has grown



DECK PLAN OF SELF-RIGHTING LIFEBOAT

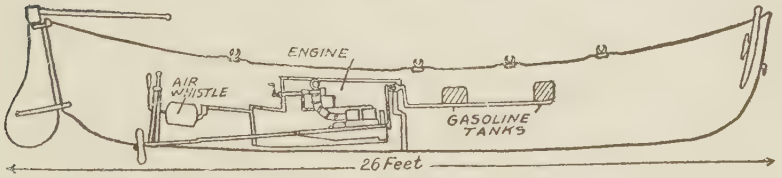


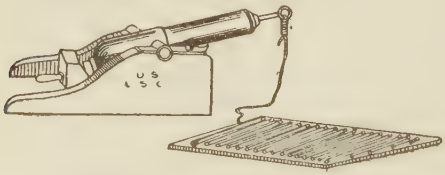
DIAGRAM OF 26-FT. POWER LIFEBOAT

the splendid system which now extends along the entire coast and lake lines of the United States.

On the Great Lakes the life-saving stations are kept open from the beginning of navigation in April to its close in December. On the Atlantic Coast they are open from Aug. 1 to June 1, while on the Pacific Coast they are open the year round. In January, 1915, the service was merged with the Revenue Cutter Service and Coast Guard.

BREECHES-BUOY—LIFE-SAVING SERVICE

LIGAMENT, anything which binds, ties, or unites one thing to another; a bond, a tie. In anatomy, short bands of strong, white glistening fibers by which the bones are bound together. The ligaments in the human body are very numerous, and all have distinctive names. In the plural, in zoölogy, two appliances, one external and one internal, for holding together the valves of a conchiferous mollusk.



LYLE GUN AND SHOT-LINE

LIGGETT, HUNTER, an American army officer; born at Reading, Pa., in 1857. He was graduated from the United States Military Academy in 1879, and appointed 2nd lieutenant of the 5th United States Infantry in the same year. After seeing service with various infantry regiments, he reached the rank of major-general in March, 1917. He served in the Spanish-American War and in the Philippine Islands. During the World War he commanded the 41st Division from September, 1917, to January, 1918; the 1st Army Corps from January to October, 1918; and from then until April, 1919, the 1st Army. Commissioned lieutenant-general Oct. 16, 1918. From May to July, 1919, he was in command of the 3d Army on the Rhine. He participated in the second Marne campaign and in the St. Mihiel and Meuse-Argonne offensives. His other assignments included command of the Army War College (1913), command of the Department of the Philippines (1916-1917), and command of the Western Department (1917 and 1919).

GENERAL HUNTER LIGGETT

LIGHT, the natural agent which, by acting on the retina, excites in us the sensation of vision. Two leading hypotheses regarding its nature have been formed: the one, the omission or corpuscular theory, which, though supported by the great name of Sir Isaac Newton, has been abandoned, and the other, the undulatory theory, which now obtains. The latter assumes the existence everywhere through the universe, or the portion of it with which we are connected, of an extremely subtle elastic medium, called luminiferous ether, the undulations of which constitute light, and when they impinge on the retina produce vision. The particles agitated are not transmitted but only the disturbance. The movements are held to be strictly analogous to the undulations of the atmosphere which produce and convey sound; or, as the word undulation

imports, those of the ocean in producing waves. Several methods of calculating the velocity with which light is transmitted are known. By one, the size of the minute circle through which the aberration of light makes stars apparently revolve is carefully noted, and the relative proportion of the earth's velocity in her orbit to that of light arriving from the stars ascertained. The result is that light is found to move about a hundred thousand times as fast as the earth, which gives the velocity about 186,000 miles per second. By another, observation is made of the time in which light actually arrives at the eye from one of Jupiter's satellites at the commencement or the close of an occultation as compared with their calculated times. It is found that 8′ 18″ are required for light to travel over half the earth's orbit, which gives, as in the former case, about 186,000 miles per second for its velocity. The velocity is also measured directly, by two instrumental methods devised respectively by Foucault and Fizeau, with the same results. The great sources of light are the sun, the fixed stars (other suns), bodies in a state of ignition, electricity, etc. The bodies sending forth rays or pencils of light are called luminous; those through which it passes easily, transparent or diaphanous; those through which it passes less easily, translucent; and those through which it cannot pass at all, opaque. When a ray meets the surface of a body, it may be refracted and decomposed or reflected. When it encounters an opaque body it casts a shadow. Admitted into a dark chamber through a small aperture to fall on a screen, the rays make images of external objects reversed. The illuminating power on any surface is inversely as the square of the distance from the source of light. This may be measured by a photometer. Light may be defracted, it may be polarized. An abundant supply of it is essential to the healthy growth of man, the inferior animals, and plants.

LIGHTHOUSE, a lofty tower or other structure, erected at the entrance of a harbor, or at some important or dangerous part of a coast, and having a strong light at the top, to guide vessels, and warn them of danger. Originally they were lighted up with fires, but now oil, gas, and electricity are used, the power of the light being increased by the adoption of glass reflectors, lenses, and prisms.

In the United States these matters are under the supervision of the Lighthouse Board. The most important lighthouse in the United States is the great tower at Barnegat, erected in 1903, provided with lights of 30,000,000 candle power. The illumination can be seen 100 miles at sea.

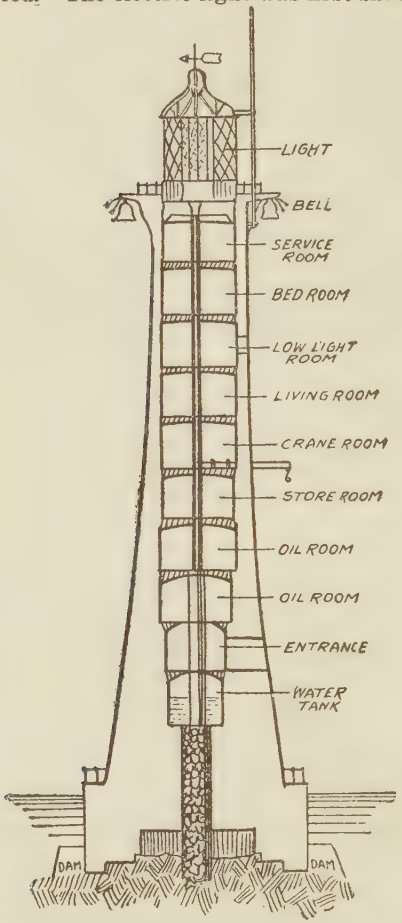
None of the early lighthouse buildings now exist. The Pharos of Alexandria (331 B. C.) gave its name to its successors. The Romans built lighthouses at Ostia, Ravenna, Puteoli, and other ports. The Phœnician Pharos at Coruna was repaired during the reign of the Emperor Trajan, was re-established as a lighthouse about 1634, and in 1847 had a dioptric apparatus placed in it. Till the end of the 18th century the lighthouses of Great Britain and America were few in number, and of an inferior description in the great essential

PETIT-MANON GRANITE TOWER LIGHTHOUSE, MAINE

of a lighthouse—viz., sending the greatest number of rays of light toward the horizon. As an example of a modern lighthouse tower we may take Skerryvore, which is 139 feet in height and 42 feet in diameter at the base, containing a mass of 58,580 cubic feet of granite. (See EDDYSTONE.)

To Augustin Fresnel belongs the honor of inventing and first employing, in 1822, the dioptric system for lighthouse purposes in combination with a central lamp having four concentric wicks. He devised the lighthouse lens, which is plano-convex, 3 feet 3 inches in height by 2 feet 6 inches in breadth, composed of a central disk, surrounded by annular rings gradually decreasing in breadth as they recede from the center. If these lenses be assembled on a frame with eight or more sides, having a lamp in

their common focus, and be made to revolve, a dioptric revolving light is produced. The electric light was first shown



SECTION OF EDDYSTONE LIGHTHOUSE

to the mariner in 1858 from the Foreland lighthouse.

LIGHTNING, the dazzling light emitted by a large spark darting from clouds charged with electricity. In the lower regions of the atmosphere it is white, in the upper one somewhat violet, as is the spark of an electrical machine in a vacuum. In the upper regions of the sky, where the air is rarefied, it tends to take the form of sheet-lightning, sometimes called heat lightning; in the lower regions it becomes more concentrated and moves in lines. As a rule lightning strikes objects from above, though occasionally ascending lightning has been seen. When it sinks deeply into the ground it sometimes vitrifies the rocks, producing fulgurites. Light travels with such speed that a flash is seen the instant it occurs. Thunder, which is simply the noise of the explosion, takes about five seconds to travel a mile, hence the distance of any flash, followed by thunder, may be calculated. If a mile distant, the danger is but slight.

LIGHTNING ARRESTER, a contrivance used in telegraphy for guarding against passage of atmospheric electricity through the instruments. The line wires are attached to a plate of brass, usually serrated on the under side. This plate rests on another plate connected with the ground, the two being separated by a thin layer of insulating material.

LIGHTNING CONDUCTOR, an appliance designed to protect a building and its inmates against destruction or damage by lighting. It was invented by Benjamin Franklin in 1755. In general an iron rod rises vertically from the roof of the building which it is designed to protect. Its height is from 6 to 10 feet, its thickness at the base two or three inches. Its top is of platinum or gilded copper. From the rod runs a wire cord, or a bar of iron, or strip of copper, to the ground, terminating in general in ramifications 18 to 21 feet below the surface, in many cases in a well. General opinion now favors a large number of rods with many points, and held off from the building by means of supports.

LIGHTSHIP, or **LIGHTBOAT**, a vessel serving as a lighthouse in positions where a fixed structure is impracticable. Over 40 lightships guard the coast of the United States. The new South Shoal lightship, 26 miles from Nantucket, is farther out to sea than any other lightship in the world.

LIGHT THERAPY. See PHOTO THERAPY, and RADIUM THERAPY.

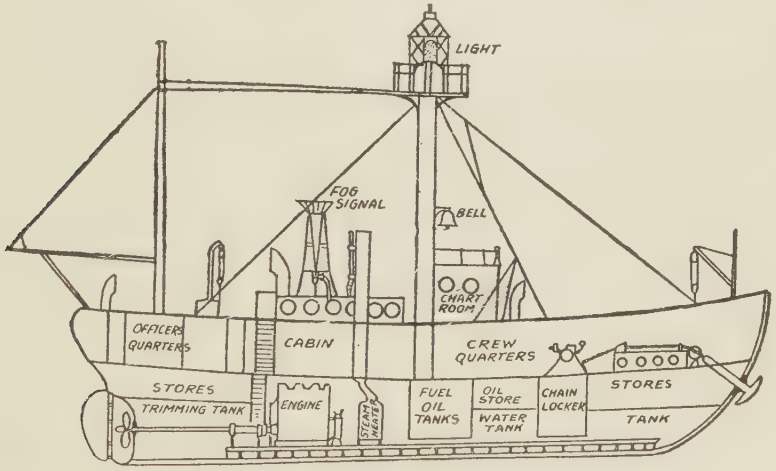
LIGNITE, fossil wood, generally of Tertiary age, converted into a kind of coal. It is usually dull or brownish-black, and has not the glistening luster of Carboniferous coal. Occasionally it is pitch black. As the name lignite implies, it, as a rule, retains the form and aspect of the original wood. It contains a larger proportion of hydrogen than wood does. If decomposition goes on, it discharges carburetted hydrogen and becomes changed into common or bituminous coal.

LIGNUM VITÆ, the wood of *Guaiacum officinale*. It is a very hard and heavy wood, brought from Cuba and

other West Indian Islands. When first cut it is soft and easily worked, but on exposure to the air it becomes much harder. It is cross-grained, and contains gum guaiacum. The wood is used for making machinery and for rollers, presses, mills, pestles, mortars, sheaves for ships' blocks, skittle-balls, etc.

LIGNY (lēn'yē), a Belgian village, famous for the defeat of the Prussians under Blücher by the French under Napoleon, June 16, 1815, the same day on which Ney's command was engaged with the British under Wellington at Quatre-Bras. The Prussians lost 12,000 men and 21 cannon; the French, 7,000 men.

LIGULA, or **LIGULE**, in botany, a strap-shaped petal of flowers of the order



SECTION OF U. S. LIGHTSHIP FOR USE ON ATLANTIC COAST

Compositæ; also the membrane which occurs at the base of the lamina of a grass leaf, as that of millet. Hence the term ligulate, applied especially to the ray florets of *Compositæ*.

LIGURIA, a district of ancient Italy, the whole territory of Genoa and Nice, and which, according to the division of Augustus, was bounded N. by the Padus (Pô), E. by the Macra (Magra), separating it from Etruria, S. by the Ligurian Sea (Gulf of Genoa), and W. by the Varus (Var) and the Maritime Alps, separating it from Transalpine Gaul. It was inhabited by an ancient people called the Ligures, of whose origin nothing authentic has been recorded. They first came into collision with the Romans, 241 B. C., and P. Lentulus Caudinus celebrated a triumph over them 236 B. C. The Ligurians, allied with the Carthaginians, commenced hostilities by attacking Placentia and Cremona, Roman colonies, 200 B. C. A long series of wars, extending over a period of 80 years, ensued between the Romans and the Ligurians. Several tribes were reduced to subjection before 173 B. C.; others held out, and one tribe in the Maritime Alps was not reduced to obedience till 14 B. C. The Lombards overran the country in 569.

LIGURIAN REPUBLIC. The French created a revolution in Genoa early in 1797, and by a convention signed at Montebello, June 5 and 6, this republic placed itself under the protection of France. Napoleon Bonaparte gave it the name of the Ligurian Republic, June 14, which was incorporated with France by a convention concluded at Milan, June 4, 1805. The Ligurian Republic was dissolved in 1814, and Genoa was annexed to Sardinia. The inhabitants revolted, and proclaimed the restoration of the republic, April 3, 1849. The revolt was suppressed, April 11.

LI HUNG CHANG, a Chinese statesman and diplomatist; born in Ho Fei, province of Anhwei, China, Feb. 16, 1823. In 1850, when the Taiping rebels invaded Anhwei, he joined Tseng Kuo Fan's army as secretary. He was appointed judge of Chekiang province, and in 1861 governor of Kiang-Su. In conjunction with Colonel (afterward General) Gordon, in 1863, he retook Suchow, and drove the rebels entirely out of Kiang-Su. For these services he was decorated with the Yellow Jacket and Peacock's Plume, and

made a hereditary noble of the third class. In 1865 he was appointed Governor-General of the Liang Kiang provinces, and in 1868 made Grand Chancellor. After the massacres at Tien-tsin in 1870 he was degraded and his titles taken away on the charge of not assisting the imperial commander of the troops; but in 1872 he was restored as Grand Chancellor and appointed Governor-General of Chihli, the metropolitan province. He was also Senior Grand Secretary, the highest distinction that can be attained by a Chinese official. When, in 1876, Margory was killed while endeavoring to explore southwestern China, Li Hung Chang was the commissioner for fixing the indemnity. He negotiated important treaties with Peru

LI HUNG CHANG

and Japan. He was a friend to foreigners and to Western civilization and culture. As a member of the Board of Admiralty he originated the Chinese navy, and was the chief promoter of the China Merchants' Steam Navigation Company. He was imperial Commissioner of Trade for the N. ports. The emperor intrusted to him supreme charge of the military and naval forces sent to Korea in the Chino-Japanese War, and he bore nearly the whole burden of the War Department, Marine Department, and Financial Department of the Chinese Government. During the war with Japan the disasters to the Chinese armies and navy were laid to his blame, and he was degraded and punished, but still retained his office of Prime Minister. He was sent to Japan in 1895 to negotiate the peace treaty, where he barely escaped assassination. In 1896 he made a tour of the world, traveling overland and was everywhere received as a highly distinguished guest. He played a prominent part in adjusting the relations of China with foreign powers after the suppressing of the uprisings of 1900–1901. He died in Peking, China, Nov. 7, 1901.

LILAC (*Syringa*), a genus of plants belonging to the natural order *Oleaceæ*, and consisting of shrubs and small trees, with four-cleft corolla, two stamens, and a two-celled, two-valvular capsule. The common lilac (*S. vulgaris*) is one of the most common ornamental shrubs cultivated in Europe and North America. It is a native of the N. of Persia, and was first brought to Vienna in the latter half of the 16th century by Busbecq, to whom we also owe the introduction of the tulip into European gardens.

LILIUM, a genus of *Liliaceæ*, tribe *Tulipeæ*, the typical genus of the tribe *Lileæ*. Known species 40, all from the N. temperate zone. *Lilium martagon*, the Martagon or Turk's cap lily, which has pale purple or white flowers, is naturalized in Surrey, England; its native country is Continental Europe. *L. pyrenaicum* is a garden escape in Devonshire, England.

Lilium candidum is the white or Bourbon lily, from the Levant; *L. croceum* is the yellow lily, from Germany; *L. Japonicum* is the Japan lily; *L. chalcedonicum* is the scarlet Martagon lily, from the Levant; *L. pomponium* is the scarlet pompone lily, from Siberia; *L. bulbiferum* is the bulb-bearing or orange lily, from Italy; *L. superbum* is the superb Martagon lily, of North America; and *L. tigrinum* is the tiger or tiger-spotted lily from China. The finest of all is a Japanese species, *L. auratum*. It is two to five feet high, the flowers, which are white with purple blotches, being sometimes a foot across. The smell is perceived at a distance. The bulbs of *L. wallichianum*, an Indian species, have demulcent properties, and are used in pectoral complaints. *L. pomponium* is cultivated in Kamchatka for its roots, which are roasted and eaten.

LILIUOKALANI, Queen of Hawaii; born Sept. 2, 1838. She was a sister of King Kalakaua, whom she succeeded as queen. She married John O. Dominis, an American, who became governor of Oahu. He died in 1891 and in the same year she ascended the throne. In 1893 she was deposed, the islanders adopting a republican form of government. She used every effort to regain her supremacy and endeavored to secure assistance from the United States, visiting Wash-

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THE EMANCIPATION GROUP BY THOMAS BALL. THIS BRONZE GROUP STANDS IN LINCOLN SQUARE, WASHINGTON

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A CABINET MEETING WHILE ABRAHAM LINCOLN WAS PRESIDENT

EDWARD BATES ATTY GEN
P.M. GENERAL
MONTGOMERY BLAIR
JOHN P. HALE
SECRETARY OF THE INTERIOR
PRESIDENT OF THE UNITED STATES
SECRETARY OF THE NAVY
SECRETARY OF WAR
CALEB B. SMITH EX SEC OF THE INT.
SIMON CAMERON EX SEC OF WAR

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ABRAHAM LINCOLN AND MEMBERS OF HIS CABINET

© Ewing Galloway

THE HOME OF ABRAHAM LINCOLN IN SPRINGFIELD, ILL.

© Ewing Galloway

THE MEMORIAL BUILDING BUILT OVER THE LINCOLN CABIN, HODGENVILLE, KY.

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THE MUCH-DISCUSSED STATUE OF LINCOLN BY GEORGE GRAY BARNARD. IT WAS EXHIBITED IN NEW YORK AND LATER SENT TO ENGLAND

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THE STATUE OF LINCOLN BY GUTZON BORGLUM. THIS IS IN NEWARK, N. J.

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STATUE OF ABRAHAM LINCOLN BY ST. GAUDENS. THIS STATUE IS IN CHICAGO

ington in 1896 for that purpose. On the annexation of Hawaii to the United States, in 1898, she returned to the island. She revisited the United States in the winter of 1901–1902 to press her claims for indemnity on the crown lands. Died Nov. 11, 1918. See HAWAII.

LILLE (Flemish Ryssel), a manufacturing town and fortress of France, chief town of the department of Nord, situated on a subtributary of the Scheldt, in a fertile district. Lille derives its name from the castle, around which it originally arose, in the midst of marshes, called L'Isle. It was founded early in the 11th century by the counts of Flanders. From 1305 it was mortgaged to France, but passed to Burgundy in 1365. Louis XIV. conquered the town in 1667, and, though it was recaptured by Marlborough and Prince Eugene in 1708, the Austrians restored it in 1713. In 1792 it successfully resisted the determined attacks of the Austrians. In 1914 Allied forces of England, France and Belgium fought the Germans for possession of the town, which changed hands several times. The Germans finally won and held it, exacting a large money tribute from the town for ransom. Pop. about 220,000.

LIMA, a city and county-seat of Allen co., O.; on the Ottawa river and on the Cincinnati, Hamilton and Dayton, the Erie, the Lake Erie and Western, and several other railroads; 71 miles N. of Dayton. It is the trade center of the Lima oil field, a region embracing six counties; and has several large railroad shops, and manufactories of cars, locomotives, machinery, and petroleum refineries. Pop. (1910) 30,508; (1920) 41,326.

LIMA, the capital of Peru; at the foot of granitic hills; 7 miles from Callao, its port on the Pacific, on the Rimac river. It is regularly built, and many of the streets have a stream of water running down the center. The numerous domes and spires give Lima a fine appearance from a distance, but the houses are mostly of unburnt brick. Among the public buildings and institutions the cathedral, the convent of San Francisco, the exhibition palace, and the university with its national library and museum, deserve special mention. The manufactures are unimportant, but there is a considerable import and export trade through the port of Callao. The climate is very agreeable, but the locality is subject to earthquakes, the most destructive having been that of 1746. Lima was founded in 1535 by Pizarro, and called Ciudad de los Reyes (City of the Kings). In January, 1881, Lima capitulated to the Chileans, who occupied it for upward of two years. Pop. about 143,000.

LIMASOL, the chief seaport of Cyprus. It has no harbor, but there is a large trade, chiefly with France, in wine and carobs. Limasol is the only place in Cyprus where English troops are permanently quartered—some in the town and 300 more three miles inland. Pop. about 10,000. Cyprus was administered by Great Britain until 1915, when the island was annexed by that power.

LIMA WOOD, the name of the dyewood also called Pernambuco wood and Nicaragua wood.

LIMBURG, a territory on the Meuse; between the provinces of Liège and Brabant; was created a countship soon after its annexation by the German king (870). In 1839 it was divided, the lands to the W. of the Meuse remaining with Belgium, while a long narrow strip on the E. side of the river was constituted the Dutch province of Limburg. The well-known Limburg cheese is made at the little town of Limburg, the former capital of the duchy. Pop. about 285,000.

LIMERICK, capital of Limerick co., Ireland, at the head of the estuary of the Shannon; 120 miles S. W. of Dublin. The town consists of English Town, the original English settlement made in the reign of King John, on King's Island; Irish Town, which lies immediately to the S., on the left bank of the river, and Newtown-Pery, to the S. of Irish Town, the newest and handsomest part of the city, dating from 1769. There are few objects of interest except the Protestant cathedral of St. Mary, founded in 1180, and rebuilt in 1490; the Roman Catholic cathedral, a Gothic structure erected in 1860; and the fine bridges across the Shannon. Pop. about 26,000.

LIMERICK, an inland county of Ireland, in the ancient kingdom of Munster, bounded N. by the river Shannon, E. by Tipperary, S. by Cork, and W. by Kerry. It is level, with the picturesque Galtees in the S. E., and toward the Kerry boundary, a circular amphitheater of hills. Boats ply up the Shannon as far as Limerick, and the salmon fisheries are important. The picturesque river Maigne, rising in the Galtees, traverses the mountains and flows into the Shannon. There are fourteen baronies in the county. The dioceses are those of Cashel, Killaloe, and Limerick. The area is 680,842 acres; capital, Limerick. Pop. about 140,000.

LIMESTONE, a general name for all rocks the basis of which is carbonate of lime. It is not generally pure, but has in it alumina, silica, etc. In regions such as Auvergne and Tuscany, in which extinct volcanoes exist, hundreds of springs, both cold and thermal, rise to the surface, bringing up from the subterranean depths carbonate of lime. The quantity thus transferred to the surface in the course of ages is enormous, and manifold streams and rivers carry it into the sea. Mollusks withdraw it for their shells, corals for their reefs, and in due time the upheaval of the sea bed converts it into a terrestrial limestone rock. Metamorphic action can destroy it, and there is little limestone in rocks which have undergone such a change. When what used to be called primitive, now crystalline or metamorphic, limestone is found in such beds, it is probably of organic origin. Modern limestones are often composed entirely of organic remains or are studded thickly with them. Thus crinoidal or encrinital limestone is composed chiefly of encrinites, chalk of foraminifers, nummulitic limestone of nummulites, and shells of *Saccamina*, or of spindle-shaped *Fusulina*. Sometimes limestone may be brecciated, concretionary, compact, magnesian, etc.

LIMITED MONARCHY, a monarchy in which the power of the sovereign is not absolute, but is constitutionally limited, usually by assemblages of the nobility, clergy, and elected representatives of the people. The sovereignty is a headship more or less real; it is not an autocracy.

LIMOGES (lē-mōzh'), capital of the French department of Haute-Vienne, and of the former province of Limousin. The staple industry is the manufacture of porcelain, which employs more than 5,000 people. Pop. about 92,000. The enamel work for which Limoges was formerly celebrated is now no longer carried on.

LIMON, a port of Costa Rica, founded in 1861, on the Caribbean Sea, in the province of the same name. Pop. about 25,000. The railway begins here, and the place has a landing pier. There are considerable exports from this place of coffee, caoutchouc, cocoanuts, sarsaparilla, vegetables, wood, and hats. Pop. about 8,000.

LIMPET, a popular name for any of the prosobranchiate gasteropods of the family *Patellidæ* and (more properly) of the genus *Patella*. The shell is usually oval and tent-shaped; interior smooth, but not nacreous. Limpets are world-wide in their distribution. They are vegetable feeders, and inhabit rocks between tidemarks, returning to the same place after feeding. They are much used by fishermen for bait, and in times of scarcity for food. Vast quantities fall a prey to the sea and shore birds. The oyster catcher (*Hæmatopus ostralegus*) is exceedingly dexterous in detaching these mollusks from the rocks, and scooping the animals from their shells.

LINCOLN, a city of England and a county in itself; capital of Lincolnshire; 120 miles N. of London; on the Witham, and at the junction of several railroads. It has been identified with the Roman Lindum Colonia, and at the time of William the Conqueror was a place of considerable strength and importance. The principal edifice is the cathedral, (dating from the 11th century), chiefly in the Early English with a tower over 260 feet high, in which is the famous bell known as "Great Tom of Lincoln," cast in 1610, cracked in 1827, and since recast into a new bell. The other most conspicuous buildings are the Guild-hall or Stone-bow (of the time of Richard III.), the remains of the castle which was founded by William the Conqueror, the old episcopal palace, and the fine old Roman arch spanning Hermin street, a theological college, and school of art, etc. The manufacture of agricultural implements and machinery forms the chief branch of industry. Pop. (1917) 58,617.

LINCOLN, a city and county-seat of Logan co., Ill.; on the Illinois Central, the Chicago and Alton, and the Peoria, Decatur and Evansville railroads; 28 miles N. E. of Springfield. It is in an agricultural, mining, and stock-raising region; and has four coal mines, grain elevators, planing mills, roller mills, and casket factories. It is the seat of Lincoln University (Cumb. Presb.), the State Asylum for the Feeble Minded, and Odd Fellows' Home for Children; and has a high school, electric and street railroad plants, waterworks, National banks, daily and weekly papers. Pop. (1910) 10,892; (1920) 11,882.

LINCOLN, a city, capital of the State of Nebraska, and county-seat of Lancaster co.; on the Burlington Route, the Union Pacific, the Chicago, Rock Island and Pacific, the Chicago and Northwestern and the Missouri Pacific railroads; midway between Chicago and Denver, and 55 miles S. W. of Omaha. It is a wholesale and jobbing center for parts of six States, and manufactures mattresses, upholstery and worked lumber. It is the seat of the State University, Nebraska Wesleyan University, Cotner

University, and Union College; contains the State Penitentiary, Insane Hospital, Home for the Friendless, several hospitals and sanitariums; and has National and State banks; electric light and street railroad plants; daily, weekly, and monthly periodicals. Pop. (1910) 43,973; (1920) 54,948.

LINCOLN, a city of Rhode Island, in Providence co. Its industries include the manufacture of dyes, and the bleaching of cotton cloth. It has a beautiful park. Pop. (1910) 9,825; (1920) 9,543.

LINCOLN, ABRAHAM, an American statesman, and 16th President of the United States; born in Hardin co., Ky., Feb. 12, 1809. His family was of Quaker and Pennsylvania origin. In 1816 his father settled in what is now Spencer co., Ind.; and for 10 years the future President was employed in hard manual labor on the paternal farm. The whole time spent by him at school, to which he went at intervals, did not amount to more than a year. At 19 he was 6 feet 4, and his physical capabilities were remarkable. When, in 1830, his father removed to Macon co., Ill., Abraham not only helped to build the family log-hut, but with a single assistant split rails enough to fence 10 acres of land. In 1831 he worked to New Orleans a flatboat which he had assisted in building. He became then for a time a clerk in the New Salem store of the owner of the boat; and in 1832 entered, and was made captain of, a company of volunteers raised on the breaking out of the Black Hawk War. Unsuccessful in the country store which he opened, he was appointed postmaster of New Salem, and—borrowing from a neighbor practitioner law books—spent his evenings in the study of law. In 1834 he was elected a member of the State Legislature, and he continued to be re-elected till 1840. In 1836 he had been licensed to practice as a lawyer, and in 1837 commenced business at Springfield, his residence till he was elected President. As a lawyer he became rapidly successful; and in politics he rose to be a prominent leader of the Whig party in Illinois. In 1844 he canvassed the State, making speeches almost daily on behalf of Henry Clay for the presidency. In 1846 he was elected to Congress. He distinguished himself as an opponent of the annexation of Texas, and of the extension of slavery, and as a supporter of its abolition in the District of Columbia. He advocated a protective tariff, the sale of public lands at a low price, and the system of grants for the improvement of rivers and harbors. When his term ended he resumed the practice of law till the repeal of the Missouri Compromise recalled him to active political life. Through his exertions a Republican Senator—the Whig party having become extinct—was returned by Illinois. In the presidential election of 1856 he worked strenuously for Fremont, and his own name was mentioned in connection with the vice-presidency. In 1858 he ran against Douglas as Republican candidate for the Senate; and after a spirited contest, Lincoln secured a large majority of the popular vote—the State Legislature, however, returning Douglas. The struggle with Douglas placed Lincoln in the foremost rank of his party; and the Republican National convention, which met at Chicago, May 16, 1860, nominated him for President. He was elected in November following. Before the time came to take his seat, South Carolina and other Southern States had seceded, and under the vacillating policy of Buchanan were able to make all their preparations for war. A plot to assassinate Lincoln in Baltimore having been discovered, his journey to Washington, from Harrisburg, Pa., was taken secretly, and he was inaugurated March 4, 1861. The war broke out with the attack on Sumter, April 12. Lincoln's administration was largely devoted to the suppression of this formidable secession. He at once issued a call for 75,000 volunteers, and secured the defense of the capital. There were conflicting policies in his cabinet, and on the field the Union armies met disheartening defeats. In these dark days the sagacity, patience, and wisdom of Lincoln were proved to the whole country. On Jan. 1, 1863, he issued the Emancipation Proclamation, by which more than 4,000,000 slaves were set free. English opinion pronounced it the noblest political document known to history, and in the verdicts of mankind it has taken its place with the Magna Charta and the Declaration of Independence. His other State papers are among the greatest in the archives of statesmanship. After the battle of Gettysburg, and various brilliant victories, the popular confidence in his administration became limitless, and he was re-elected by increased majorities in 1864, and early in the following year he witnessed the triumph of his policy, and the end of the Civil War. He had served but little more than a month of his second term when he was assassinated. On the evening of April 14, 1865, while present at Ford's Theater, in Washington, he was shot by Wilkes Booth, an actor and fanatical secessionist. Lincoln died the next morning.

LINCOLN, BENJAMIN, an American military officer; born in Hingham, Mass., Jan. 24, 1733, and lived as a simple farmer till he was 40 years of age. On the breaking out of the Revolution he began his military career and was rapidly promoted. Appointed chief in command of the S. division of the army, he led the American forces against the British at Charleston and Savannah. He was forced to capitulate when in possession of the former place, by Sir Henry Clinton, in 1780. Notwithstanding the failure of his Southern campaign, the bravery and capacity of Lincoln were left untarnished, and after being imprisoned, he was, on his exchange in 1781, received with honor by Washington, and appointed to the command of the central division at the siege of Yorktown. On the surrender of Cornwallis he was deputed to receive the submission of the captured troops. In 1781 he was chosen by Congress Secretary of War, and served in that office for three years, when he returned to his farm; but was called in 1786 and 1787 to command the militia in repressing Shay's insurrection. In 1787 he was elected lieutenant-governor of Massachusetts, and in 1789 was made collector of the port of Boston which post he held for 20 years. In 1789 he was commissioner to treat with the Creek Indians; and in 1793 again, to make peace with the Western tribes. He was the author of various papers, historical, agricultural, etc. He died in Hingham, Mass., May 9, 1810.

LINCOLN, JOSEPH CROSBY, an American writer and poet, born in Brewster, Mass., in 1870. He wrote much in prose and verse, taking as the scene of his novels Cape Cod. His best known works are "Cape Cod Ballads" (1902); "The Postmaster" (1912); "Thankful's Inheritance" (1915); "Extricating Obadiah" (1917).

LINCOLN, ROBERT TODD, an American diplomatist; born in Springfield, Ill., Aug. 1, 1843; eldest son of Abraham Lincoln; was graduated at Harvard College in 1864; served on the staff of General Grant as assistant adjutant-general; was admitted to the bar in 1867; Secretary of War in 1881–1885; minister to Great Britain in 1889–1893; and became president of the Pullman Palace Car Company in 1897. Chairman of the Board of Directors, 1911.

LINCOLN COLLEGE, a college of Oxford University, England; founded in 1427 by Richard Fleming, Bishop of Lincoln.

LINCOLN MEMORIAL UNIVERSITY, an institution for higher education, founded near Cumberland Gap, Tenn., in 1897, largely through the efforts of General Oliver Otis Howard. Its purpose is to furnish educational advantages to dwellers in the mountain regions of Tennessee. There are about 1,000 students. President, George A. Hubbell, Ph.D.

LINCOLN, MOUNT, a peak of the Rocky Mountains, in Colorado, about 8 miles N. E. of Leadville, reaching a height of 14,297 feet. A railroad has been constructed to the silver-mining works at the summit, and there is a meteorological station conducted by Harvard College, another station being placed at a lower level (13,500 feet).

LINCOLNSHIRE, an eastern county of England, second only to Yorkshire in area, bounded N. by the Humber, E. by the German ocean, S. by Cambridgeshire, and W. by Lancashire. It is level, and is partially protected by artificial embankments from the sea. Agriculture is well advanced with barley the chief product, while there is much stockraising and fishing. It is traversed by the rivers Trent, Witham and Welland. There are traces of a submarine forest, but little mineral wealth. Area 2,638 square miles. Pop. about 575,000.

LIND, JENNY. See GOLDSCHMIDT.

LINDSAY, or LYNDSAY, SIR DAVID, a Scotch poet; born about the year 1490. He studied in the University of St. Andrews, and in 1509 became page of honor to James V., then an infant. In 1528 he produced his "Dreme," and in the following year presented his "Complaynt" to the king. In 1530 he was inaugurated lyon king-at-arms, and in 1531 sent on a mission to Charles V., on his return from which he married. He soon afterward published a drama entitled a "Satyre of the Three Estatis," followed in 1536 by his "Answer to the King's Flyting"; and by the "History and Testament of Squire Meldrum" in 1538. His last work, "The Monarchie," was finished in 1553. For more than two centuries Lindsay was the most popular poet in Scotland. His satirical attacks on the clergy in some degree paved the way for the Reformation. He died in 1555.

LINDSAY, NICHOLAS VACHEL, an American poet, born in Springfield, Ill., in 1879. He graduated from the Springfield High School, and studied at Hiram College and at the Art Institute of Chicago. He spent several years in lecturing in the Y. M. C. A. and for the Anti-Saloon League. He made several

tours throughout the United States, distributing his own verses and reciting them. In 1920 he visited England, where he was received with great enthusiasm. His works include "A Handy Guide for Beggars" (1916); "General William Booth Enters Heaven, and Other Poems" (1913); "The Congo and Other Poems" (1914); "The Chinese Nightingale and Other Poems"' (1917). He wrote under the name of Vachel Lindsay.

LINDSEY, BENJAMIN BARR, an American jurist and social worker, born in Jackson, Tenn., in 1869. He was educated in the public schools and after studying law was admitted to the bar in 1894. After practicing for several years in Denver, Colo., he was elected judge of the Juvenile Court. His administration at that court and his advocacy of improved methods in dealing with juvenile offenders, won wide attention and gave him international authority as to features of juvenile delinquency. Although strongly opposed, he was successively re-elected. He was the author of the Colorado Juvenile Court Law and also was the author of many laws passed by the Colorado Legislature. He was an unsuccessful candidate for Governor of Colorado in 1906. He lectured widely on children's problems and was the author of "Problems of the Children"; "The Beast and the Jungle"; "The Rule of Plutocracy in Colorado." During the World War he was engaged in war work, both in the United States and abroad.

LINEN, a general name for a cloth of very extensive use, made of flax, and differing from cloths made of hemp only in its fineness. The manufacture of linen is of so ancient a date that its origin is unknown. At a very early period linen cloths were made in Egypt, the cloth wrappings of the mummies being all composed of this substance. In the time of Herodotus linen was exported from Egypt; it also formed the dress of the Egyptian priests, who wore it at all their religious ceremonies; hence they were called "linen wearing" by Ovid and Juvenal. Linen passed from Egypt to the Romans, but not till the time of the emperors, when the Roman priests began to wear linen garments. Linen was also used as a material for writing; the Sibylline books, and the mummy bandages covered with hieroglyphics, are instances of this use of the fabric. Linen and woolen cloths formed the only material for dresses during the Middle Ages; and fine linen was held in very high estimation, the manufacture being carried to the greatest perfection in Germany and Brabant. Cotton, on account of its cheapness, has taken the place of linen for many purposes; but the best paper cannot be manufactured without linen. About the middle of the 18th century the inventions of Hargreaves and Arkwright were first applied to the manufacture of linen at Leeds. The manufacture of linen was first introduced into the United States by the establishment of a large mill at Fall River, Mass., in 1834.

LINGARD, JOHN, an English historian; born in Winchester, England, Feb. 5, 1771. He was educated at the college of Douay, in France, and on its removal to England, during the French Revolution, accompanied it there. The work on which his fame rests is his "History of England from the First Invasion by the Romans to the Accession of William and Mary in 1688"; the first edition of which appeared between 1819–1825. It was subsequently considerably enlarged and is esteemed one of the best text-books on English history. He was author also of the "History and Antiquities of the Anglo-Saxon Church." The dignity of cardinal was offered to Lingard, and declined. He died in Hornby, Lancashire, England, July 17, 1851.

LINKÖPING (li*ng*'che-ping), one of the oldest towns in Sweden, capital of East Gothland and the seat of its bishop. The Romanesque cathedral, which dates from the 12th century, is one of the finest churches in Sweden. Since 1887 Linköping has had direct communication for vessels with the Baltic, and now exports timber and gilded moldings. Pop. (1918) 25,930.

LINLITHGOW, an ancient royal burgh, the county-town of Linlithgowshire, Scotland; 16 miles W. of Edinburgh. Linlithgow Palace, mostly rebuilt between 1425 and 1628, was fired by Hawley's dragoons in 1746. It was the birthplace of James V. and Mary Stuart.

LINNÆAN SYSTEM, the sexual system of botany introduced by Linnæus, which, though unequaled for the aid it affords in finding the name of a flower, yet labors under the fatal defect that it is purely artificial. Previous to his time, Jung, rector of the gymnasium at Hamburg, who died in 1657, had introduced the Latin botanical nomenclature. Tournefort, who died in 1708, had been the first to classify plants into strictly defined genera. It remained for Linnæus to arrange them and define the several genera and species scientifically. He

divided the vegetable kingdom into 24 classes.

LINNÉ (lin'nā), **KARL VON**, commonly LINNÆUS, the greatest botanist of his age; born in Rashult, Sweden, May 13, 1707. He was the son of a clergyman; educated at the grammar school of Wexiö. He entered the University of Lund, where his botanical tastes were encouraged; and removed to Upsala in 1728, where he undertook the supervision of the botanic garden, and became assistant to the botanist Rudbeck. Aided by the Academy of Sciences at Upsala Linné made a journey through Lapland, the result of his travels was "Flora Lapponica," published in 1735. In this year he went to the University of Harderwyk in Holland and took an M. D. degree; afterward visited Leyden, where he published the first sketch of his "Systema Naturæ" and "Fundamenta Botanica." In 1736 he visited England, went to Paris in 1738, and afterward settled in Stockholm as a physician. He became Professor of Medicine at Upsala in 1741, and then of botany and natural history; was made a Knight of the Polar Star with the rank of nobility. The great merit of Linné as a botanist was that he arranged plants on a simple system of sexual relationship and prepared the way for the more natural and satisfactory classification which has superseded the Linnæan system. Among his works are "Genera Plantarum" (1737); "Classes Plantarum" (1738); "Flora Suecica" (1745); "Fauna Suecica" (1746); "Philosophia Botanica" (1751); and the "Species Plantarum" (1753). He died in Upsala, Jan. 10, 1778.

LINNET, a very common and well-known song-bird, frequenting all Europe S. of 64°, and in Asia extending to Turkestan. It is a winter visitor to Egypt and Abyssinia, and is found in great numbers in Barbary, the Canaries, and Madeira. In autumn and winter the plumage is brown; in the breeding season the breast and head of both sexes becomes a crimson-red, varying only in degree. The (later) generic and specific names have reference to the fondness of the bird for the seeds of flax and hemp. It is popularly known, according to its sex and the season of the year, as the red, gray, or brown linnet.

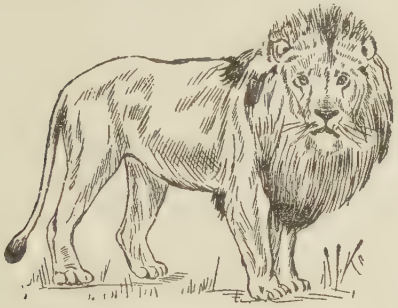
LINOTYPE, a machine, operated by finger keys, which automatically produces and assembles, ready for the press or stereotyping table, type metal bars, each bearing, properly justified, the type characters to print an entire line. The linotype is the invention of Ottmar Mergenthaler. Beginning in 1876, he perfected his device in 1886, the first newspaper to use it being the New York "Tribune." The device has since been greatly improved by means of spacing facilities, etc., and is adapted for book work as well as for newspapers. Its manipulation may be roughly approximated to that of a typewriter. The linotype does not set type. It produces a slug or line of metal upon which the characters to be printed stand out after the fashion of reading matter for the blind.

LINSEED OIL, the fixed oil expressed from linseed. Linseed oil consists of the glycerides of linoleic, palmitic, and stearic acids, about nine-tenths of the whole being the glyceride of linoleic acid. It may be taken as the type of the class known as drying oils, from their property of drying up into a transparent, tough, resinous mass when exposed to the air. When the oil is boiled for some time, till it loses about one-sixth of its weight, it becomes thicker, tenacious, and viscid, and dries up, still more readily than in the fresh state, into a turpentine-like mass, scarcely soluble in oils. It then forms the basis of printers' and painters' varnishes. Linseed oil, mixed with chloride of sulphur, forms caoutchouc-like products, and with alkalies a soft soap.

LINZ, capital of the crown-land of Upper Austria; 117 miles W. of Vienna, on the Danube. As a place of some strategic importance Linz has been besieged on several occasions, notably by the peasants in 1626, and during the war of the Austrian Succession in 1741 and again in 1742. Here peace was signed between the Emperor Ferdinand III. and George Rakoczy of Transylvania in 1645, and in the vicinity Bernadotte defeated the Austrians in 1809. Pop. about 70,000.

LION, in zoölogy, *Felis leo* (formerly elevated into a distinct genus with a single species, *Leo nobilis*), one of the largest and the most important of the living carnivora. Its range in historical time is very wide. The Hebrew Scriptures abound with references to it, and in the time of Darius lions were employed to execute judicial sentences (Dan. vi: 16–24). It is mentioned by Homer; Herodotus and Theocritus mention lions as found in Africa, and in Europe; by Vergil, by Ovid, by Martial in almost every book, and by Catullus. It played an important part in the sanguinary games of the Roman amphitheater. Its geographical range is now confined to Africa and the S. W. of Asia, extending E. as far as Gujerat. It varies

somewhat in size; but for an adult African male, from snout to tip of tail, 10 feet, tail 3 feet, height at shoulder, 3 feet 6 inches, are average measurements. The Gujerat variety is somewhat smaller. "In color lions vary from a deep chestnut-brown to gray. The color of the mane varies equally. In the Nubian



LION

lion it is generally pale tulvous, and in Cape lions black, but all intermediate shades are found both in Nubia and the Cape country." Professor Dawkins enumerated among the Mid Pleistocene, and again among Late Pleistocene mammalia of Great Britain *Felis leo*. A

LIONESS

Felis spelæa was once recognized; it is now deemed not specifically distinct from the common lion. In the Early Pleistocene, Professor Dawkins has the saber-toothed lion, sometimes called the saber-toothed tiger.

LIONS, GULF OF, the large gulf of the Mediterranean on the S. of France, extends from the frontier with Spain E. to the Hyères Islands.

LIPARI ISLANDS (lē′pä-rē), known also as the ÆOLIAN ISLANDS, a volcanic group in the Mediterranean, consisting of half a dozen larger and numerous smaller islands, with an aggregate area of 116 square miles, and situated off the N. coast of Sicily, N. W. of Messina. They rise to 3,170 feet above the level of the sea; many of the smaller islands form part of the rim of a gigantic crater. The ancient classical poets localized in these islands the abode of the fiery god Vulcan—hence their ancient name, Vulcaniæ Insulæ. Lipari is the largest. Pop. about 15,000. The principal products of the islands are grapes, figs, olives, wine (Malmsey), borax, pumice stone, and sulphur. The warm springs are much resorted to, and the climate is delightful. Lipari, the chief town, is a bishop's see and a seaport, and has 4,968 inhabitants. Stromboli (3,022 feet) is almost constantly active; Vulcano (1,017 feet) is so intermittently; the rest are extinct. Pop. of islands about 20,000.

LIPARITE, an igneous rock, so called from its occurrence in the island of Lipari. It has a wide geographical distribution, and is also known as rhyolite and quartz trachyte. It is a highly acidic rock, and has a glassy base, often more or less devitrified. The more compact varieties often exhibit sphenelitic and fluxion structures, which occasionally impart a kind of laminated or banded aspect to the rock.

LIPPE, or LIPPE-DETMOLD, formerly a small principality of northern Germany; since November, 1918, a republic; between Westphalia on the W. and Hanover on the E. The Weser touches it on the N. and the Teutoburger Wood crosses it on the S.; area, 469 square miles; pop. about 150,000. Capital, Detmold. The principal occupation is agriculture, with the rearing of cattle and swine.

LIPPI, FRA FILIPPO (lēp′pē), commonly known as LIPPO LIPPI, a Florentine painter; born in Florence, in 1412; but, losing his parents while still an infant, he was intrusted to the Carmelite friars of Florence. As a youth he abducted Lucrezia Buti, a ward or novice of the convent of St. Margaret at Prato, and afterward married her. Lippo Lippi, who studied principally Masaccio, painted religious subjects, which he conceived and designed from a human standpoint. His greatest work was done on the choir walls of the cathedral of Prato —illustrations of the lives of John the Baptist and St. Stephen. He also painted several Madonnas and altar pieces. Died in Spoleto, Italy, Oct. 9, 1469.

His son, FILIPPINO LIPPI, was born in

Florence in 1460, and educated at Prato. His artistic style has a strong element of originality, but also shows the influence of his father and Botticelli. His most celebrated frescoes are scenes from the lives of St. Peter and St. Paul in the Brancacci chapel at Florence, incidents illustrating the character of St. Thomas Aquinas in the Minerva church at Rome, and subjects from the legends of St. John and St. Philip in Sta. Maria Novella at Florence. His best easel pictures include "The Virgin and Saints" (in the Uffizi at Florence), "The Adoration of the Magi," "The Vision of St. Francis." Filippino died in Florence in April, 1504.

LIPPINCOTT, SARA JANE (CLARKE), pseudonym GRACE GREENWOOD, an American writer; born in Pompey, N. Y., Sept. 23, 1823. She was well known as an editor and contributor. "Ariadne" is one of her best poems. She published: "Greenwood Leaves" (1850); "Poems" (1851); "Records of Five Years" (1868); and "New Life in New Lands" (1873); "Recollections of My Childhood"; "Stories and Legends of Ireland"; etc. She died April 20, 1904.

LIPPITT, HENRY FREDERICK, an American public official; born in Providence, R. I., in 1856. He graduated from Brown University in 1878. He at once entered the cotton manufacturing business and became general manager of The Manville Co. He was also director in many other banks and corporations. From 1911 to 1917 he was United States Senator from Rhode Island.

LIPPMANN, WALTER, an American writer; born in New York, in 1889. He graduated from Harvard in 1910, and afterward carried on post-graduate studies in philosophy. From 1914 to 1917 he was assistant editor of the "New Republic," and in the latter year he became an adviser of the War Department at Washington. He contributed widely to periodicals on social and political subjects. His published writings include "A Preface to Politics" (1913); "Drift and Mastery" (1914); "The Stakes of Diplomacy" (1915).

LIPTON, SIR THOMAS JOHNSTONE, a British sportsman; born in Glasgow, of Irish parents. He was proprietor of large tea estates in Ceylon; owned a refrigerator car plant in the United States; and was president of a pork packing company in Chicago. He was, however, best known as the owner of the English yachts "Shamrock I." and "Shamrock II.", with which vessels he unsuccessfully competed for the AMERICA'S CUP (*q. v.*) with the American yacht "Columbia" in 1899 and 1901. During Queen Victoria's Jubilee, in 1897, the Princess of Wales issued an appeal for money to provide dinners for the poorest of the poor in London on some one day of the festivities. To this fund Lipton contributed $100,000. The result of this movement was "The Alexandra Trust," the purpose of which is to provide restaurants all over London where working people may buy wholesome, well-cooked food at cost price. To this object Lipton gave $500,000 in 1898, and promised more when needed. In consideration of his liberality he was knighted in 1898. Representing the Royal Ulster Yacht Club, Sir Thomas contested for the America's Cup in 1899, 1901, 1903, and again in July, 1920.

LIQUEFACTION OF GASES. It was formerly believed that certain gases could not be liquefied under any conditions, and from the sixteenth to the eighteenth century it was customary to distinguish "gases" from "vapors" by the statement that only the latter could be liquefied. It is now known, however, that any gas can be liquefied provided the necessary high pressure and low temperature can be obtained. The earliest gas to be liquefied was sulphur dioxide, by Monge and Clouet at the beginning of the nineteenth century, and a few years later chlorine and hydrogen chloride were reduced to the liquid state by Northmore. Little interest was shown in the subje t however, until 1823, when Faraday began his series of experiments on liquefaction of gases, as a result of which he succeeded in producing sulphur dioxide, hydrogen sulphide, cyanogen, ammonia, carbon dioxide and nitrous oxide in a liquid form. His method was to introduce materials for generating gas into the limb of a bent tube, the other limb being sealed and packed in a freezing mixture. On generating the gas, high pressure was produced, and at length the gas liquefied in the cold limb. Other workers, on similar lines, were Bussy, Thilorier and Natterer, but certain gases, including hydrogen, oxygen, nitrogen and carbon monoxide could not be liquefied even though the enormous pressure of 3600 atmospheres was used by Natterer, and for a time it was believed that there existed so-called "permanent gases," which defied liquefaction. Then came the discovery, by Andrews, of "critical" phenomena. He found that on compressing carbon dioxide in a tube at a temperature below 30·9°C, the volume diminished until, at a certain pressure, which

varied with the temperature, liquefaction began. At a temperature above 30·9°C, however, he found that it was impossible to liquefy carbon dioxide, no matter what pressure was employed. He observed similar phenomena in the case of nitrous oxide, and concluded that for every gas there is a definite temperature above which it cannot be liquefied. This temperature he called its *critical temperature.* It was now clear that the failure of Natterer, and others, to liquefy certain gases was due to the fact that the temperatures used by them were above the critical temperatures and the attention of workers on the subject was turned to the production of extreme cold. In 1877 Louis Cailletet succeeded in liquefying both oxygen and carbon monoxide. He found that by compressing a gas at a low temperature and then suddenly releasing the pressure, a marked drop in temperature occurred, and it was by utilization of this fact that he and later workers succeeded in liquefying in turn all the "permanent gases." Liquid air and oxygen were produced in large quantities as a result of Dewar's experiments, and Hampson and Linde, in 1895, introduced the method of *self-intensive refrigeration,* in which the gas to be liquefied is continuously supplied through an apparatus in which it is cooled by expansion, and each portion of gas, after such cooling, is utilized in cooling the succeeding portion, until the cumulative effect produces liquefaction.

LIQUID, a fluid; a material substance the particles of which have a perfect freedom of motion, without any sensible tendency to approach to or recede from one another, except by the action of some external power. Liquidity, as a condition of matter, is therefore comprehended in the condition of fluidity. The particles of a liquid are held together with considerable force, notwithstanding their freedom of motion, since a small quantity of a liquid has a tendency to take a spherical form when at a distance from any substance for which its particles have greater affinity than for one another. This is particularly apparent in mercury, oil and water. The form of the dewdrop is also another familiar instance.

LIQUID AIR. See LIQUEFACTION OF GASES.

LIQUOR TRAFFIC. See PROHIBITION.

LISBON (Portuguese, Lisboa; ancient Olisipo), the capital of Portugal, province of Estremadura, on the Tagus, near its mouth. The city is partly built on the shores of the Tagus, and on several small hills, and presents a magnificently picturesque appearance from the river. The most beautiful part is called the New Town, stretching along the Tagus, and is crowded with palaces. The principal public squares are, the Praça do Commercio, 565 feet long; and the Praça do Rocio, 1,800 feet long. The churches are profusely decorated, and some of them are built of marble. Among other architectural curiosities the most important is the Alcantara aqueduct, which supplies all the public fountains and wells of the city. Its course is partly underground, but as it crosses the deep valley of the Alcantara near Lisbon, it is carried over 35 marble arches for a length of 2,400 feet. Lisbon contains a large number of educational and scientific institutions, among which are the Royal Academy of Sciences, founded in 1778, a naval academy, and an academy of engineering. The harbor, or road, of Lisbon, is one of the finest in the world; and the quays, which extend nearly 2½ miles along the banks, are at once convenient and beautiful. The exports comprise wine, oil, fruit, and salt; among the imports are woolens, cottons, silks, metals, colonial produce, and furs. The manufactures of Lisbon are inconsiderable, consisting chiefly of silk fabrics, jewelry, paper, and soap; there are also sugar refineries, tanneries, and potteries; and its jewelers and goldsmiths are among the most expert in Europe; but its backwardness is owing principally to a want of energy and industry. The climate of Lisbon is variable, but, on the whole, healthful and genial. Pop. about 436,000.

LISSA (Polish, Leszno), a town of Prussia, 40 miles S. by W. of Posen; was during the 16th and 17th centuries the headquarters of the Bohemian Brethren in Poland; here were their most celebrated school, a seminary, a printing office, and their archives. The town grew up round a colony of that sect, to whom the Leszczynski family afforded an asylum early in the 16th century. It was burned by the Poles in 1656, and again by the Russians in 1707. Pop. about 17,000.

LISSA, an island of Dalmatia, in the Adriatic Sea, 32 miles S. W. of Spalato; area, 40 square miles; is mountainous, grows good wine and olive oil; pop. about 9,000. Fishing is the chief occupation. The island was held by Great Britain from 1810 to 1815. Off it the Italian fleet was defeated by the Austrians under Tegethoff on July 20, 1866. The Italian admiral, Persano, was next year

expelled from the service. Lissa was bombarded and captured by an Anglo-French fleet during the Great War.

LISTER, LORD JOSEPH, an English surgeon; born April 5, 1827. He was graduated at London University in arts (1847) and medicine (1852), and became a Fellow of the Royal College of Surgeons, England, in 1852, and of the Royal College of Surgeons, Edinburgh, in 1855. He was successively assistant surgeon and lecturer on surgery, Edinburgh; Regius Professor of Surgery, Glasgow; Professor of Clinical Surgery, Edinburgh; Professor of Clinical Surgery, King's College Hospital, London (1877); and was made surgeon extraordinary to the queen. In addition to important observations on the coagulation of the blood, the early stages of inflammation, and other matters, his great work is known as the antiseptic system of surgery. Lister was awarded many foreign honors, and received the medal of the Royal Society in 1880, the prize of the Academy of Paris in 1881. He was made a baronet in 1883 and a peer in 1897. Died at Walmer, England, Feb. 10, 1912.

LISZT, FRANZ, a Hungarian pianist and musical composer; born in Raiding, Hungary, Oct. 2, 1811. His father, who was musical, directed his studies, and at the age of nine he was performing in public. Several Hungarian noblemen provided means to send him to Vienna, where he studied the pianoforte and composition (1821–1823). He received further teaching in Paris. About 1839 he toured Europe as a pianist, and was received everywhere with enthusiasm. He settled in Weimar and became director of the Court Theater. In this position he was enabled to produce works by Schumann, Berlioz, and Wagner, and to win favor for their new methods of musical composition. He made Weimar famous in the annals of music by producing Wagner's "Lohengrin" and Berlioz's "Benvenuto Cellini." In 1861 he resigned the directorship of Weimar and went to reside in Rome, where he took minor orders in the Roman Catholic Church in 1865, and was thenceforth generally known as Abbé Liszt. Subsequently he retired from Rome to his native country, where in 1875 he received a government pension and was named director of the Hungarian Academy of Music in Budapest. He gave his assistance to foster the Wagner festivals of music in Bayreuth, and died there July 31, 1886. His chief musical compositions are: The "Faust" and "Dante" symphonies, "Hungarian Rhapsodies," "Symphonic Poems," and the oratorios of "St. Elizabeth" and "Christus." He also wrote monographs on Chopin and Franz. His writings were published in six volumes at Leipsic in 1880–1883. By the Countess D'Agoult, well known under the pseudonym "Daniel Stern," he had a son and two daughters.

LITCHFIELD, a city in Montgomery co., Ill.; on the Cleveland, Cincinnati, Chicago and St. Louis, the Illinois Central, and several other railroads; 60 miles S. W. of Decatur. It is in a region rich in coal, natural gas, and oil; and has manufactories of machinery, railroad cars, brick and tile, and flour. There are a public library, high school, St. Francis Hospital, waterworks, electric light plants, National and State banks, daily, weekly, and monthly periodicals. Pop. (1910) 5,971; (1920) 6,215.

LITCHFIELD, GRACE DENIO, an American writer; born in New York in 1849. She spent much time in travel and studied in Europe. She was a frequent contributor to magazines, and her best-known books are "Little Venice" (1890); "The Moving Finger Writes" (1900); "The Burning Question" (1913). She also published two volumes of poems.

LITCHI, or LEE-CHEE (*Nephelium Litchi*), one of the most delicious fruits of China, Cochin-China, and the Malay Archipelago. The tree which produces it belongs to the natural order *Sapindaceæ*, and has pinnate leaves. The fruit is of the size of a small walnut, and grows in racemes. It is a red or green berry, with a thin, tough, leathery, scaly rind, and a colorless, semi-transparent pulp, in the center of which is one large dark-brown seed. The pulp is slightly sweet, subacid, and very grateful. The Chinese preserve the fruit by drying, and in the dried state it is imported.

LITER, or LITRE, the French standard measure of capacity in the decimal system. It is a cube, each side of which measures 3.937 inches, and it contains 61.028 cubic inches, or 2.113 pints.

LITERARY PROPERTY, property in intellectual productions expressed in a literary form. In United States law it is defined as the sole liberty of printing, reprinting, publishing, and vending the same. Though there is evidence that among the Greeks and the Romans authors earned financial profit through their books, and though the scribes of the Middle Ages, who were almost exclusively monks, often gained their livelihood thereby, the right of property in the multiplication of such books is a modern

idea. The invention of printing naturally greatly added to the possible returns inherent in literary work, but the emolument that went to the author continued small. The earliest instance on record of an author being safeguarded in his literary property is the case of Peter of Ravenna, whom the Republic of Venice in 1491 endowed with the exclusive right of printing and selling his work "Phœnix." The Ordonnances des Moulins of Charles IX. in 1566 and the letters patent of Henry III. in 1576, in France, likewise gave some definition to literary property. In 1512, in Germany, John Stadium received an imperial privilege for every book he might print, and in Basel, in 1531, printers were prohibited for three years from reprinting the books of one another. To Pynson, who succeeded Caxton, was issued in 1518 the first English copyright. From that time on privileges continued to be issued to authors and publishers. The idea of international copyright was first taken up in Germany, particularly in Prussia, which in 1836 gave protection to the writers of every country that reciprocated such protection. In the year following, Henry Clay put before the United States Congress a petition by British authors in favor of an international copyright act. From that time on efforts to secure international copyright have continued, and laws to give effect to that purpose have been passed in all the countries of Europe and America.

LITHARGE, the yellow or reddish protoxide of lead partially fused (PbO). It is extensively used in the manufacture of glass, of enamels, of artificial gems, of lead, plaster and lead soap, of sugar of lead, white and red lead, and other compounds.

LITHIA, in chemistry, oxide of lithium. Carbonate of lithia acts as a powerful diuretic, which may be given in acute and chronic gout, in uric-acid gravel, and renal calculus. It may be used externally as a lotion. Citrate of lithia is also lithontriptic. These salts, being solvents for uric-acid calculi, alter the quality of the urine, and prevent the crystallization and deposit of the substances forming gravel and calculi. Muriate lithia waters are waters impregnated with chloride of lithium, as at Baden Baden. They are useful in gout.

LITHIUM, (symbol Li; at. wt.=7), a monatomic element of the alkali group of metals. It is very widely distributed through the mineral kingdom. It can be obtained by reduction of its fused chloride by means of the electric current. The metal has a white color, and fuses at 180°. Lithium appears to be the lightest solid body known, having a density of only 0.5936. Like potassium and sodium, lithium dissolves in anhydrous ammonia, and on evaporating the liquid, it is left behind, with its original appearance and color.

LITHOGRAPHY, the process of engraving or drawing on stone, in such a way as to produce a surface from which printed copies can be multiplied in the press. It was invented by Alois Senefelder about 1799. Almost the only stone suitable for lithographic work is that known as lithographic stone. On such a surface the artist produces the design to be printed from. This is done by one of four distinct methods: (1) he draws it with a fluid, watery ink; (2) with a solid crayon; (3) he obtains it by transfer from an inky design on paper by various means, or (4) he engraves it on a prepared stone.

LITHUANIA, formerly one of the provinces of the Russian Empire, since the World War an independent state. Lithuania includes three groups of territory: Lithuania proper, or Litivia, which formed the governments of Vilna and Troki; the Duchy of Samogitia; and Russian Lithuania, comprising Polesie, Black Russia, or Novogrodek, White Russia, or Minsk, Meislav, Vitebsk, Smolensk, Polotsk and Polish Livonia. Part of it is included in East Prussia. The inhabitants are a race separate by themselves, speaking a language which is said to be more closely related to ancient Sanskrit than any other European tongue or dialect. They are at least partly Slavic, and bear close affinity to the Wends of Prussia, the Letts of Livonia and the Cours of Courland.

Lithuania was, in ancient times, subject to Russia, but in the twelfth century gained its independence, being ruled by a ruler who bore the title of Grand Duke. At one time the Lithuanians conquered Russian territory to the very gates of Moscow. In 1386 the Grand Duke of Lithuania, Jagello, was elected King of Poland, which brought about the union of the two countries in 1569. After the partition of Poland by the European Powers, in 1797, Lithuania was annexed to Russia, together with a portion of Poland.

At one time the country was a universal forest, very sparsely inhabited, but Catherine the Great, of Russia, distributed large parts of it among her German favorites and a certain percentage of it was reclaimed by serf labor. Yet even now the country is not thickly populated.

It was in this region that the first heavy engagements between Russia and Germany took place, in 1914, when, shortly after war was declared, the Russians crossed the Nieman and invaded East Prussia, only to be hurled back in the Masurian Lakes by Hindenburg. In the fall of 1915 the Germans began their drive through Courland into Lithuania proper, with Vilna, the ancient capital of the Lithuanians, as their objective. On Sept. 11, 1915, the battle for the possession of Vilna and the surrounding territory opened. Three days later the city was in their possession. The battle continued, however, until Sept. 28, and was one of the important engagements in this theater of the war.

Having acquired military possession of this territory, the Germans prepared to consolidate their possession by forming a civil government that would give them support. The descendants of the court favorites, to whom Catherine had made the land grants, still Germans at heart, co-operated with the German Government in this effort. In September, 1917, these elements, assuming the right to represent the Lithuanian people, formed the Grand Diet at Vilna. On Dec. 11, 1917, the executive body of the Diet, the Lithuanian National Council, supposed to represent all the political parties among the people, issued a declaration of independence, which advocated "a permanent, firmly established alliance between the Lithuanian State and the German Empire, which should be realized primarily in military and commercial conventions, and in community of tariff and currency."

It was the German contention that this kind of civil organization in all the occupied Baltic provinces constituted "self determination" of the people that caused the disruption of the Brest-Litovsk peace negotiations in February, 1918, the Russian Bolsheviki demanding that the German military forces withdraw and give the people the right to declare themselves without pressure from German influences.

On March 23, 1918, a delegation from the Lithuanian Grand Council was permitted to present its declaration of independence to the German Imperial Chancellor, who, in his answering speech, said, "Lithuania will take a share of Germany's war burdens, which are promoting Lithuania's emancipation." The effect of this declaration created a sentiment against the alliance with Germany, even among the German landowners, who constituted the limited body of voters in the new State. On July 11, 1918, the Diet held a meeting at Vilna and declared in favor of a monarchical form of government. To forestall the probability that the Germans would demand that the King of Prussia be elected head of the new government, the Diet chose the Duke of Urach, a Catholic prince of the cadet branch of the Württemberg royal family, as their king.

The final defeat of the Central Powers, however, brought about the downfall of this clique of rulers of Lithuania. In January, 1919, the Lithuanians, fearing aggression from the Russian Bolsheviki, and a possible revolution within Lithuania by Bolsheviki sympathizers, placed themselves under the temporary administration of the Polish Government. In March occurred a Cabinet crisis, brought about by the withdrawal of their support of the administration by the Socialists. A new Cabinet was constituted, representing a Christian Democratic majority, with Dovaitis as Premier. On April 4, 1919, Antanas Smetona, a lawyer, and the former president of the Council of State, was elected President of the Lithuanian Republic.

LITTLE FALLS, a city in Herkimer co., N. Y., on both sides of the Mohawk river; and on the New York Central and Hudson, and the West Shore railroads; 22 miles E. of Utica. The chief industries are dairying, cheese-making, lumbering, and the manufacture of knit goods, and calfskins. There are Union Free School and Academy, public library, city hospital, waterworks, National bank, daily and weekly periodicals. Pop. (1910) 45,941; (1920) 65,142.

LITTLE ROCK, a city, capital of the State of Arkansas, and county-seat of Pulaski co.; on the Arkansas river, St. Louis, Iron Mountain and Southern, the St. Louis Southwestern and the Rock Island railroads; 125 miles S. W. of Memphis. It is the trade and jobbing center of the State; and has cotton-seed oil mills, gas works, railroad machine shops, cooperage shops, etc. It is the seat of the Law and Medical College of Arkansas, Arkansas Industrial University, and the Arkansas Schools for Deaf Mutes and the Blind, Little Rock University, Arkansas Female College, and Philander Smith College. It contains the State capitol, State Library, St. John's Military College, high schools, and convents; and has gas; electric light and street railroad plants; waterworks, many daily, weekly, and monthly periodicals. The city was settled in 1814; made the capital of the territory in 1820; and was held by the Confederates during the greater part of the Civil War. Pop. (1910) 45,941; (1920) 65,142.

LIU-KIU (lyö-kyö′) **ISLANDS**, a group of 55 (mostly small) islands which form an integral part of the empire of Japan, extending at irregular intervals S. W. from Kyushu in Japan toward Formosa, and constituting the Japanese prefecture of Okinawa; length 80 miles, average breadth 12 to 15 miles; area, 1,863 square miles; pop. about 502,000. The only two islands of considerable size are Oshima and Okinawa. The people closely resemble the Japanese and are evidently of the same descent. Sugar is largely grown, the sago palm is cultivated, and rice, millet, cotton, tobacco, indigo and tea are raised, with a variety of fruits. The food of the people is largely sweet potatoes, fish and pork. Capital of province, Naba; pop. about 48,000. These islands were conquered by the Prince of Satsuma in 1609, and long paid him an annual tribute.

LIVADIA, a town of Greece, on the little stream Hercyno. Here are the famous cave and oracle of Trophonius, and the fountains of Lethe and Mnemosyne.

LIVER, the largest gland in the body, weighing about four pounds, and measuring in its greatest length nearly 12 inches. It is placed obliquely in the abdomen, on the right side, with its convex surface upward, and the concave downward. It is in relation as to its position with the diaphragm above, the stomach and intestines below, and the right kidney, sometimes extending almost over to the spleen on the left side. It corresponds by its free edge with the lower margin of the ribs. It is divided by fissures into five lobes, two on the upper surface, right and left lobes, and with them three minor lobes on the under surface. The liver consists of lobules, a connecting structure, Glisson's capsule, ramifications of the portal vein, hepatic duct, hepatic artery and veins, lymphatics, and nerves, and is inclosed and kept *in situ* by the peritoneum. The functions of the liver are twofold: The separation of impurities from the venous blood of the chylo-poietic viscera previously to its return to the general venous circulation, and the secretion of bile, the fluid necessary to chylification; thence it passes into the duodenum and the gall bladder by means of the ducts of the liver, after mingling with the mucous secretion from the follicles in the duct walls.

LIVERMORE, MARY ASHTON (RICE), an American reformer and lecturer; born in Boston, Mass., Dec. 19, 1821. In 1862 she was appointed agent of the Northwestern branch of the United States Sanitary Commission. After the war she was conspicuous in her efforts to promote the woman suffrage and temperance movements. Among her popular lectures are: "What Shall We Do With Our Daughters?"; "The Moral Heroism of the Temperance Reform." She was the author of "Pen Pictures" (1865); "Thirty Years Too Late" (1878); etc. She died May 23, 1905.

LIVERPOOL, a city of England, county of Lancashire, on the estuary of the Mersey; 202 miles N. W. of London, and 31 miles W. of Manchester. It is also a county by itself for some purposes. Among the noteworthy buildings are the Town Hall, rebuilt in 1745, occupying one side of the square; the Exchange Buildings, Custom House, Post-office, Dock Office, St. George's Hall (a magnificent structure of the Corinthian order, covering over three acres), the Free Public Library and Museum (having over 100,000 volumes), Walker Art Gallery, Picton Reading and Lecture Rooms. The University College, Liverpool College, and Nautical College are the principal educational institutions. There are many charitable establishments and hospitals. A superb new system of waterworks was completed in 1893, by means of which water is conveyed from Lake Vyrnwy, in Wales. Sefton Park, of 250 acres in the S. part, is elaborately landscaped. The other principal parks are Stanley, Shiel, Newsham, Edgehill, and Wavertree. The docks of Liverpool are among the greatest of the world's engineering works. They are formed for the most part by excavating the river bed, by dredging inside a sea-wall built in the river. The protecting wall is 11 feet thick, and 40 feet high from its foundations. There are nearly 40 of these inclosed docks, with a total water area of 381 acres and 35 miles of quays. A great landing stage for passengers, covering four acres, extends along the river above the docks. It is floated on boiler-plate pontoons, having hinged bridges connecting it with the sea-wall. Liverpool has lines of steamships to all important foreign ports. The construction of large merchant and war vessels is carried on extensively, and there are large engine, cable, and anchor manufactories, brass foundries, sugar refineries, breweries, glass-staining works, and numerous manufacturing industries. There are about 100 Anglican and 44 Roman Catholic Churches, with 170 churches of the various Protestant sects. The Church of St. Peter is the diocesan cathedral. Pop. (1918) 753,353.

LIVERPOOL, ROBERT BANKS JENKINSON, EARL OF, an English politician; born June 7, 1770. He entered Parliament under Pitt's auspices in 1790, and on his father being created Earl of Liverpool in 1796 he became Lord Hawkesbury. As foreign secretary in the Addington ministry he negotiated the treaty of Amiens, and he became home secretary in 1804. On the assassination of Percival in 1812 he became premier, and held that position till 1827. His opposition to all liberal measures, the severity with which he repressed internal disturbances, and his prosecution of Queen Caroline, rendered him extremely unpopular. He died in London, England, Dec. 4, 1828.

LIVERPOOL, UNIVERSITY OF, an institution for higher education, founded in Liverpool, in 1881. From 1884 to 1903 it was a part of Victoria University. It was then reorganized and made an independent university. It includes the departments of art, science, engineering, law, and medicine. Much attention is given to the university extension course. It has about 1,500 students.

LIVINGSTON, a city of Montana, the county-seat of Park co. It is on the Yellowstone river, and on the Northern Pacific railroad. It is the headquarters of a railroad division, and its industries include machine shops, lumber mills, lime works, etc. It is the center of an important stock raising and agricultural region. It has a public library and a high school. Pop. (1910) 5,359; (1920) 6,311.

LIVINGSTON, EDWARD, an American statesman; born in Clermont, Columbia co., N. Y., May 26, 1764. He was a brother of Robert Livingston, was educated at Princeton College, and was called to the bar in 1785. In 1794 he was elected member of Congress, and distinguished himself by his opposition to Alien and Sedition Bills. He belonged to the party then called Republican, and since Democratic. In 1801 he retired from Congress, and accepted the two offices of mayor of New York, and attorney-general for the district of New York. Owing to his negligence and the fraud of an agent, he resigned office in 1804, giving up his property to the State and settled at New Orleans. He became a member of the Legislature of Louisiana and revised the municipal law. He also drew up a new code of criminal law for the State. On this code his fame rests. His manuscript was burnt on the night it was finished, and he did the work over again, at the cost of two years' labor. In 1829 he became Senator of the United States, Secretary of State under President Jackson, and, in 1833, ambassador to France. While at Paris he was chosen Foreign Associate of the Academy of Sciences. He died in Rhinebeck, N. Y., May 23, 1836.

LIVINGSTONE, DAVID, a Scotch traveler; born in Blantyre, March 19, 1813. He first went out to Africa in the service of the London Missionary Society, 1840. He discovered the Victoria Falls of the Zambezi in 1855. In 1858–1864

DR. DAVID LIVINGSTONE

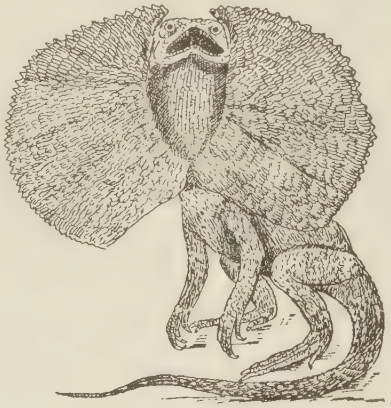
he prosecuted his labors as explorer and missionary in Africa, and was without any communication with Europe until found by Stanley. He worked in Africa till his death May 1, 1873. His works are: "Missionary Travels and Researches in South Africa" (2 vols., 1857); "Narrative of an Expedition to the Zambezi and its Tributaries" (1865); "Last Journals of David Livingstone in Central Africa, from 1865 to his Death" (1874).

LIVONIA, one of the three former Baltic provinces of Russia to which belong also the islands of Oesel, Mohn, and Küno; area, 17,574 square miles; pop. about 1,778,500. It forms the E. side of the Gulf of Riga, and lies between Esthonia on the N. and Courland on the S. being separated from this latter by the Dwina river. The country is mostly flat, and nearly one-fourth of it is covered with forests. Lakes and streams and marshes are common. The soil is only of moderate fertility; rye, barley, oats, flax, and potatoes being the principal crops. Distilling, brewing, iron-founding, oil-pressing, and cork, wool, and paper manufacture are the more important industries. Sawmills are active.

The fisheries are valuable. The Livonians proper, a Finnic race akin to the Esthonians, have dwindled. Capital, Riga; pop. about 560,000. In the second year of the World War (1914–1918) the Russians dismantled the factories and removed all valuables from public buildings to save them from the Germans, who sooner or later would attack the city. This did not happen until 1917, the Germans taking the city on Sept. 3 of that year. By the terms of the Brest-Litovsk peace, signed by the Bolsheviks, March 3, 1918, about a fourth of Russia was surrendered to the victors, including Livonia. After the armistice of November, 1918, it was agreed to that all German troops should be withdrawn, and that the territory be divided between Latvia and Esthonia.

LIVY, TITUS LIVIUS PATAVINUS, a Roman historian of the Augustan age; born in Patavium (now Padua), Italy, 59 B. C., according to Varro, or in 61 according to Cato; appears to have gone to Rome during the reign of Augustus, where his literary talents soon obtained for him the favor and patronage of the emperor. As an admirer of the ancient institutions of his country, Livy attached himself in opinion to the party of Pompey. Augustus, entertaining a sincere regard for the historian, did not allow his friendship and patronage to be affected by political opinions, though they seemed to call in question the right by which he ruled the destinies of Rome. Having spent the greater part of his life in the metropolis, he returned in old age to the town of his birth, and there died A. D. 18, in the 77th year of his age. Livy has erected for himself an enduring monument in his "History of Rome." This great work, which he modestly designated "Annales" (Annals), contained the history of the Roman State from the earliest period till the death of Drusus, 9 B. C., and originally consisted of 142 books. Only 35 of these have descended to us; of the others, with the exception of two, we possess "Epitomes," or short summaries, but the books themselves have been entirely lost.

LIZARD, the popular English name of numerous reptiles forming the order *Lacertilia* or *Sauria,* and having usually two pairs of limbs and an elongated body terminating in a tail. The lizards number more than a thousand species, accommodating themselves to all conditions except cold, and increasing in size and number in tropical regions. In some the tongue is thick and fleshy and in others it is divided, while in most cases it is protrusible. Some lizards are vegetable feeders, but for the most part they are carnivorous and live upon small birds, insects, etc. The eggs are deposited and left to be hatched without



FRILLED LIZARD

care from the parents. Of the three species found in Great Britain the common lizard (*Lacerta vivipara*) is the

LIZARDS
A. *Draco volans* (Malayan)
B. *Lacerta Viridis* (European)

most widely distributed; the sand lizard (*Lacerta agilis*) is confined to portions of England, and the green lizard (*Lacerta viridis*) is found on the island of

Guernsey. The chief families of lizards are the *Scincidæ,* or skinks; the *Geckotidæ,* or geckos; the *Iguanidæ,* or iguanas; and the *Chamæleonidæ,* or chameleons. Poison glands are wanting in the lizards; the only exception being the *Heloderma* of Arizona and Mexico, which is capable of inflicting a poisonous bite by means of poison glands connected with grooved teeth.

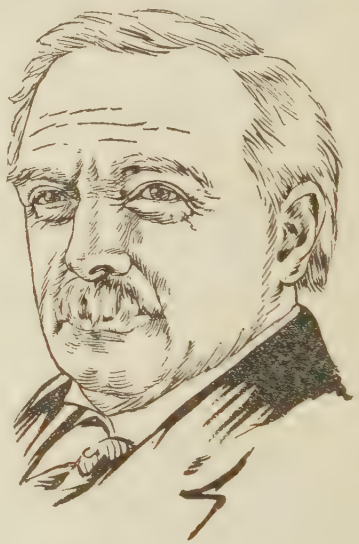
LLAMA, or **LAMA,** an even-toed ungulate of the family *Camelidæ;* habitat, the S. parts of Peru. It is larger than the guanaco, usually white, sometimes spotted with brown or black and sometimes entirely black. In size it is smaller, and in general form lighter than the camels, standing about three feet at the shoulder; no dorsal dump. Feet narrow, toes widely separated, each with a distinct pad; hairy covering long and woolly. The earliest account of this animal is that of DeZarate, treasurer-general of Peru, in 1544. The llama is only known in a domesticated state, and is still used as a beast of burden.

Remains of llamas have been found in the Pleistocene deposits of the Rocky Mountains and in Central America.

LLANQUIHUE, a province of Chile; between the Andes and the Pacific Ocean; area nearly 8,000 square miles; is extremely fertile, yielding abundant harvests to its inhabitants, who are mostly Germans; capital, Puerto Montt. Pop. (1917) 148,214.

LLOYD, HENRY DEMAREST, an American writer on economics, brother of David; born in New York, May 1, 1847. He received his education at Columbia College, and shortly after graduating joined the editorial staff of the Chicago "Tribune." He resided in Winnetka, Ill. His chief work is the notable book "Wealth Against Commonwealth." He has also written "A Strike of Millionaires against Miners, or the Story of Spring Valley," "A Country Without Strikes," etc. He died in 1903.

LLOYD-GEORGE, DAVID, a British statesman; born in Manchester, of Welsh parentage, in 1863. His father was an invalid and the boy was brought up under humble circumstances and in most unpromising surroundings. He educated himself and studied law. He showed great talent in his chosen field and through the winning of an important lawsuit involving the right of burial in parochial burial grounds, he became widely known. He was elected to the House of Commons in 1890 and was re-elected without interruption. During the first ten years of his career he attracted comparatively little attention. He first came into public notice as a bitter opponent of the Boer War. He warmly supported the Boers and with this gained the reputation of being the most unpopular man in England. He was threatened, hated, and mobbed. Following the close of the war, however, his reputation rapidly increased and his ability had become so evident that he was included in the Liberal Ministry of 1906, as president of the Board of Trade. In 1908 he was appointed Chancellor of the Exchequer and in this capacity put through a bill for an old-age pension and for other reform measures. He was active in the passage of a bill aimed to cripple the veto power of the House of Lords. In 1911 he presented the second of his great reforms, the National Insurance Bill. He was also prominent in



DAVID LLOYD-GEORGE

the bill providing for the disestablishment of the Anglican church in Wales, and supported the Irish Home Rule Bill. In 1913 he embarked upon a campaign, the project of which was to free the land by breaking up the great estates and providing for a minimum wage for farm labor, rigid building laws, and other radical measures. These efforts won for him the displeasure of the land-owning classes. The outbreak of the World War put an end to these domestic questions for the time being. It was the part of Lloyd-George as Chancellor of the Exchequer to arrange for war loans greater than ever required before, and in this he proved a veritable genius. As a result of the dissatisfaction with the problem

of munitions, Lloyd-George was appointed and made in 1915 Minister of Munitions. He at once re-organized the industries of the country with marvelous efficiency and within a short time the army in France was abundantly supplied with its necessities. On the formation of the Coalition Ministry in December, 1916, Lloyd-George became Prime Minister. During this time he was practical dictator. On the conclusion of the war and the assemblying of the Peace Conference at Paris, Lloyd-George took a conspicuous and leading part. He and President Wilson were the chief figures of the Conference, and with remarkable skill, he obtained practically all the points at issue desired by Great Britain.

During 1920 he put through the House of Parliament the deferred Irish Home Rule Bill and the measures necessary for financial and economic reconstruction.

LOAM, alluvial soil, consisting of sand and clay soil in considerable quantity. If one or the other largely predominates, the soil ceases to be loam. In founding, a mixture which essentially consists of sand and clay, the former largely predominating, with a certain quantity of horse-dung added, or some equivalent for the same, such as chopped straw, sawdust, cow-hair, etc. Beds of loam are sometimes found of nearly suitable composition, but it is more commonly made up by blending different sorts of sand, clay, etc., in a mill resembling a pug-mill. In molding, it is always used quite wet, like plaster, but is dried perfectly before pouring. It is employed for large work in both brass and iron, obviating the use of a pattern.

LOAN AND TRUST COMPANY, a chartered institution, in the United States, which has the authority to execute trusts, to lend money on security, at legal rates of interest, and to issue obligations for money or other property on deposit with it. These institutions are not allowed to issue bills to circulate as money, or to loan money to their officers, and are not required to keep lawful money reserves.

LOANDA, SAINT PAUL DE, chief town of the Portuguese possessions on the W. coast of Africa; on a small bay, 210 miles S. of the mouth of the Bango. It has broad, tree-shaded but dirty streets, several churches, forts (1578), and the residences of the governor and bishop. The harbor is gradually sanding up, so that vessels lie 1¼ mile from shore to load and unload. Pop. about 16,000.

LOBBYISTS, a term applied to men who make a business of corruptly influencing legislatures by means of money paid to the members, or by any other method that is considered feasible. Many women engage in this work as well as men.

LOBOS ISLANDS, two small groups of rocky islands, about 12 miles off the coast of Peru, famous for the great quantity of guano which they produced.

LOBSTER, a well-known decapod, macrurous marine crustacean, of the family *Astacidæ*. It has five pairs of ambulatory legs, the first pair being the chelæ or great claws, the next two pairs also chelate but smaller, the last two pairs monodactyle. Color dull, pale reddish-yellow, spotted with bluish-black; the spots coalescent on the upper parts. Lobsters do not stray from their haunts, and each situation is found to impress its own shade of color upon the shell.

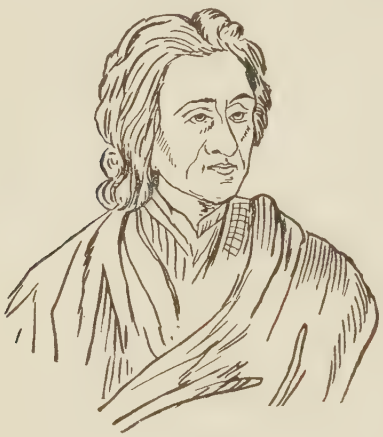
LOCAL OPTION, the right of each locality of a State, such as each county, township, or city, to determine for itself whether or not some particular measure of legislation shall be enforced therein, applied more especially as to whether the liquor traffic shall be licensed and carried on. Its utility ceased on the passage of the Prohibition Amendment in 1919.

LOCHLEVEN, a beautiful oval lake of Kinross-shire, Scotland, 23 miles N. N. W. of Edinburgh. Lying 353 feet above sea-level, and engirt by Benarty (1,167 feet), the West Lomond (1,713), and other hills, it measures 3⅝ miles by 2; discharges by the Leven, flowing 16 miles E. to the Firth of Forth; is 10 to 90 feet deep; and has an area of 3,406 acres, drainage operations having reduced its size by one-fourth in 1826–1836. Of seven islands, the largest are sandy, treeless St. Serf's Inch, an early seat of the Culdees, and Castle Island, with the 14th-century keep of a castle which in 1567–1568 was for 10 months the prison of Mary, Queen of Scots. Since 1633 and earlier the loch has been famous for its delicate pink-fleshed trout, and since 1856 for its fly-fishing.

LOCKE, DAVID ROSS, pseudonym PETROLEUM V. NASBY, an American humorist; born in Vestal, Broome co., N. Y., Sept. 20, 1833. He learned the trade of printer. He took charge of the Toledo "Blade" in 1865, and at once became popular as a humorous writer and later as a lecturer. He began his "Nasby" letters in 1860 and continued them throughout the war. They were col-

lected and published in book form in 1868, under the title of "Swingin' Round the Circle" and "Letters from Confederit X-Roads." He died in Toledo, O., Feb. 15, 1888.

LOCKE, JOHN, an English philosopher; born in Wrington, in Somersetshire, in 1632. He was educated at Westminster and Christchurch College, Oxford. In 1666 he was introduced to Lord Ashley, afterward Earl of Shaftesbury, and when in 1672, Lord Shaftesbury was appointed lord-chancellor, he made Locke secretary of presentations, and at a later period, secretary to the Board of Trade. On his patron retiring to Holland, to avoid a state prosecution, Locke accompanied him. The English envoy demanded Locke of the



JOHN LOCKE

States, on suspicion of his being concerned in Monmouth's rebellion, which necessitated his temporary concealment. At the revolution he returned to England and was made a commissioner of appeals, and in 1695 a commissioner of trade and plantations. He resided the last few years of his life, at Oates, in Essex. As a philosopher, Locke stands at the head of what is called the Sensational School in England. His greatest work is the "Essay on the Human Understanding." His other works are the "Treatise on Civil Government," "Letters on Toleration," "On the Conduct of the Understanding," "Vindication of the Reasonableness of Christianity." He died in 1704.

LOCKE, WILLIAM JOHN, an English novelist, born in Barbados in 1863. He was educated at the Queen's Royal College, Trinidad, and at St. John's College at Cambridge. He was an architect by profession and from 1897 to 1907 was secretary of the Royal Institute of British Architects. In the meantime he wrote many novels which were well received by the critics but which were not popular with the public. His first novel to attain publicity was "The Morals of Marcus Ordeyne" in 1905. This was followed in the next year by his best-known book, "The Beloved Vagabond." This was followed by "Septimus," 1907; "Simon the Jester," 1910; "Stella Maris," 1913; "The Fortunate Youth," 1914; "Jaffery," 1915. Locke is one of the most widely read of modern English novelists.

LOCKER-LAMPSON, FREDERICK, an English versifier; born in 1821. He served some years as précis-writer in the Admiralty office, and made his name widely known as a writer of unusually bright and clever society verses by his "London Lyrics" (1857). Later books are "Lyra Elegantiarum" (1867) and "Patch-work" (1879). In 1850 he married a daughter of the 7th Earl of Elgin, who died in 1872; and in 1874 the daughter of Sir Curtis Lampson, when Locker added the name of Lampson to his own. Eleanor, his daughter by the first marriage, in 1878 married Lionel Tennyson. He died May 30, 1895.

LOCKHART, JOHN GIBSON, a Scotch biographer and editor; born in Cambusnethan, Lanarkshire, Scotland, July 14, 1794. He was educated at Glasgow University; gained an exhibition at Balliol College, Oxford; studied for the Scottish bar, but never practiced; and began his literary career in 1817 as a contributor to the newly-established "Blackwood's Magazine." In 1820 he married the daughter of Sir Walter Scott, and in 1826 succeeded Gifford as editor of the "Quarterly Review," a position which he occupied for 27 years. As the author of the life of Sir Walter Scott he will be remembered. He died in Abbotsford, Nov. 25, 1854.

LOCK HAVEN, a city and county-seat of Clinton co., Pa.; on the West Branch canal, and the Pennsylvania and Erie railroads; 25 miles W. S. W. of Williamsport; in a beautiful mountain valley. The manufacture and shipment of pine and other lumber is the chief business interest. It has churches of the leading denominations, National bank, newspapers, public and private schools, State normal school, hotels, gas works, foundries and tanneries, machine shops, planing-mills and sawmills. A bridge crosses the river here. Pop. (1910) 7,772; (1920) 8,557.

LOCKJAW. See TETANUS.

LOCKPORT, a city and county-seat of Niagara co., N. Y., on the Erie Canal and the New York Central railroad; 25 miles N. N. E. of Buffalo. The 10 massive locks of the canal, which here makes a descent of 66 feet, give name to the town. The canal affords great water-power, which is utilized in a large number of flour and lumber mills, machine shops, foundries, cotton and woolen mills, and other establishments some of which are of great extent. The canal here passes through a deep cut several miles in length, excavated in the solid rock. The city is the trade center for the county, with an annual trade of $5,000,000; has churches, public schools, National and other banks, female seminary, and daily and weekly newspapers. Large quantities of Niagara limestone and sandstone are here quarried for building purposes. Pop. (1910) 17,970; (1920) 21,308.

LOCKYER, JOSEPH NORMAN, an English astronomer; born in Rugby, England, May 17, 1836. In 1869 he was elected an F. R. S., and in 1870 was appointed secretary to the Royal Commission on Scientific Instruction, made Lecturer on Astronomy at the Normal School of Science at South Kensington, and sent out to Sicily as head of the eclipse expedition. In the following year he headed a similar expedition to India and was elected Rede lecturer at Cambridge. He had already in 1866 discovered a new method of observing the sun; and in 1874 he gained the Rumford medal of the Royal Society and was appointed editor of "Nature." He was an able popular lecturer on astronomical physics, and wrote "Elementary Lessons in Astronomy" (1868); "Studies in Spectrum Analysis" (1878); "Contributions to Solar Physics" (1873); "The Spectroscope and its Applications" (1873); a primer on "Astronomy" (1874); "Star-Gazing" (1878); "The Chemistry of the Sun" (1887); "The Meteoritic Hypothesis" (1890); "Dawn of Astronomy" (1894); etc. He died in 1920.

LOCOMOTIVE. See RAILWAYS.

LOCRI. See GERACE.

LOCUS, a Latin word meaning a place or spot. In geometry, the locus of a point is the line generated by the point when moving according to some determinate law. The locus of a line is the surface generated by a line moving according to some fixed law. Thus, if a point moves in the same plane in such a manner that the sum of its distances from two fixed points of the plane is constant, the locus of the point is an ellipse. Locus delicti: The place where an offense is committed. Locus pœnitentiæ: Time or opportunity for repentance before a probative writing is executed. Locus sigilli (usually abbreviated L. S.): The place where the seal, usually appended to a person's signature, is to be affixed to a deed or public document. Locus standi: The right of any person or persons to appear and be heard on any matter before a particular tribunal.

LOCUST, any migatory species of the orthopterous family *Acridiidæ*, specially *Œdipoda migratoria*, the migratory locust. An allied species, *Œ. cinerascens*, is found in the S. E. of Europe. The females excavate holes in the earth and deposit their eggs in a long mass enveloped in a glutinous secretion. The larvæ commence their destructive career almost as soon as they are hatched. The migrations of locusts are probably in search of food. Their range in the Old World stretches from Spain and the S. of France, through Russia to China; S. of this boundary line they are equally destructive. The Rocky Mountain locust is *Caloptenus spretus*. There seems to be no special periodicity in the appearance of swarms of locusts. Locusts are by preference vegetable-feeders; but they will attack dry animal substances, and even become cannibals when other food fails. Next to man, their chief enemies are insectivorous birds, parasitic beetles of the family *Cantharidæ*, and dipterous flies of the family *Bombyliidæ*.

LOCUST, SEVENTEEN YEAR, an American Cicada.

LOCUST TREE, a name given in different parts of the world to different trees of the natural order *Leguminosæ*. The Carob tree is often so called in the countries bordering on the Mediterranean, and its pods are the locust beans of the stores. The locust tree of the United States (*Robinia pseud-acacia*), also called the false acacia, or thorn acacia, and on the continent of Europe and in Great Britain very generally the acacia, is a valuable and extremely beautiful tree. The wood, known as locust wood, is useful for all purposes in which great strength, and especially toughness, is required; "locust," indeed, is the slang term in the United States for a policeman's baton. The honey locust tree of the United States is a gleditschia. The locust tree of the West Indies is *Hymenæa courbaril*, a gigantic tree whose pods also supply a nutritious matter, a mealy substance in which the

pods are embedded. The bark of the tree is anthelmintic; it yields a kind of resin called anime, and it is valuable as a timber tree, the timber (also known as locust wood) being close-grained and tough.

LODE, the technical name for a metalliferous or ore-producing vein. These differ in their length, width and depth, and also in the richness of mineral they contain.

LODESTAR, or **LOADSTAR** ("leading star") a name given to the polar star.

LODGE, HENRY CABOT, an American statesman and author; born in Boston, Mass., May 12, 1850; was lecturer on history at Harvard College in 1876–1879, and editor of the "North American Review" in 1873–1876. He then entered political life, and in 1893 was elected United States Senator from Massachusetts and re-elected 1899–1905–1911, and 1917. He was permanent chairman of the Republican Convention in Philadelphia in 1900 and in Chicago in 1908. Regent of Smithsonian Institution (1886–1893) and in 1905. He was a strong opponent of the League of Nations without reservations that would give the United States the right to act independently and in all cases preserve her freedom in dealing with international questions. He is the author of a "Life of Daniel Webster," and of lives of Alexander Hamilton and George Washington; also of "Boston" in the series of "Historic Towns"; of a "Short History of the English Colonies in America"; "Studies in History" (1886); "Historical and Political Essays"; "Certain Accepted Heroes, and Other Essays"; "The Spanish-American War"; "A Frontier Town" (1910); "Early Memories"; "One Hundred Years of Peace" (1913); etc. In 1921 he was chairman of the Senate Committee on Foreign Relations and was the majority leader on the floor of the Senate.

LODGE, SIR OLIVER JOSEPH, an English scientist and student of psychical phenomena, born at Penkhull, Staffordshire, England, in 1851. He was educated in science at the University College of London, and on the founding of the University College of Liverpool, he became professor of physics. He remained in the post until 1900, when he was appointed principal of the University of Birmingham. In 1915 he was appointed Romance lecturer at Oxford. He made important studies in physics of electricity and ether and became one of the most eminent authorities in that line of physics. In addition to this work he interested himself in educational reforms, and in philosophical and religious discussion. Through his study of these subjects he became interested in psychical research and gradually came to the belief in the communication of the spirits of the dead. From 1901 to 1904 he was president of the Society for Psychical Research. The death of his son Raymond in the war was followed by a remarkable book called "Raymond" which purported to be an account of messages received from his son after his death. This book was widely read and created much discussion. In 1920 Sir Oliver made a lecture tour through the United States, discussing spiritism and other subjects. His popular readings include "Modern Views of Electricity" (1889); "Pioneers of Science" (1893); "The Substance of Faith" (1907); "Immortality of the Soul" (1908); "Modern Problems" (1912); "Continuity" (1910).

LODGE, THOMAS, an English dramatist, romance-writer, and poet; born in West Ham, near London, England, about 1558. After studying at Trinity College, Oxford, he entered at Lincoln's Inn, but seems to have led a wild and rollicking life. In 1589–1591 he varied his life by taking part in two sea expeditions against the Spaniards, in the neighborhood of the Azores and Canary Islands. On the first of these voyages he wrote an euphuistic romance, "Rosalynde" (1590) which supplied England's great dramatist with the chief incidents of "As You Like It." Lodge himself wrote two dramas, "The Wounds of Civil War" (1594), and "A Looking-glass for London and England" (1594), written in collaboration with Robert Greene. He died in 1625.

LODI, a borough of New Jersey, in Bergen co. It is on the Saddle river, and on the New York, Susquehanna and Western railroad. Its industries include the dyeing of silk and manufacture of rubber goods and car equipment. Pop. (1910) 4,138; (1920) 8,175.

LODI (lō′dē), a town of North Italy; on the Adda, 18 miles from Milan. It has a Romano-Gothic cathedral dating from the 12th century; manufactures of linens, silks, and Majolica porcelain; and a great trade in Parmesan and Stracchino cheese and wine. Pop. of commune, about 28,032. **Lodi Vecchio**, a ruined village, 4 miles W., was destroyed by the Milanese in 1111–1158. Here Bonaparte, May 10, 1796, forced the long and narrow bridge in the face of a tremendous fire from the Austrian batteries.

LODZ, a town of Poland, in the government of Piotrkow, 75 miles S. W. of Warsaw. Second city of Poland in size and is center of cotton and woolen manufacture. Its industrial development has been rapid, largely owing to its population of Germans and Jews. During the German campaign in Poland in 1914 there were heavy combats round the city and the Germans entered it on October 8. After retreating they advanced again and Lodz was again evacuated by the Russians on December 6, its position at the extremity of a salient in the Russian line having made further sacrifices for its defense strategically unsound. It remained in German hands to the end of the war. Pop. 1912, 450,004.

LOFODEN, or **LOFOTEN**, a chain of islands on the N. W. coast of Norway, stretching S. W. and N. E. for 150 miles. They include the Lofoden proper and the Vesteraalen, lying further N. The largest islands are Hind, And, and Lang in the Vesteraalen group, and East Vaag, West Vaag, Flakstad, and Moskenäs in the Lofoden proper. Total area, 2,247 square miles. All of them are rugged and mountainous. The highest point is 3,090 feet above sea-level. The waters on the E. side of these islands are visited in January to March every year by vast shoals of codfish, which attract a large fleet of fishermen. The average number of boats is 5,000 to 6,000, manned by 28,000 to 30,000 men. Besides fishing, sheep-farming is also carried on. The permanent population is about 40,000.

LOGAN, a city of Ohio, the county-seat of Hocking co. It is on the Hocking river, and on the Hocking Valley railroad. It is the center of an important natural gas and oil region. Its industries include foundries and machine shops, flour mills, furniture factories, shoe factories, brick works, etc. It has a public library, a hospital, and other public buildings. Pop. (1910) 4,850; (1920) 5,493.

LOGAN, a city of Utah, the county-seat of Cache co. It is near the Logan river, and on the Oregon Short Line railroad. Its industries include saw mills, beet sugar factories, condensed-milk factories, knitting and flour mills. It is the seat of the State Agricultural College, Brigham Young College, and New Jersey Academy. It has a Federal building, a court house, and other public buildings. Pop. (1910) 7,522; (1920) 9,439.

LOGAN, JOHN ALEXANDER, an American soldier and statesman; born in Jackson co., Ill., Feb. 9, 1826. The Mexican War broke out when Logan was 20, and he at once enlisted and was made a lieutenant. After the war he studied and was admitted to the bar in 1851, the same year he was elected to represent Jackson and Franklin counties in the Legislature, and from that time was almost uninterruptedly in the public service, either civil or military. He was twice re-elected to the Legislature, and in 1856 was a Democratic presidential elector. He enlisted on the outbreak of the Civil War, and rose to the rank of major-general, being distinguished throughout the struggle for valor and patriotism; elected United States Senator from Illinois 1871–1877–1883–1889; was nominated for the vice-presidency on the ticket headed by James G. Blaine, 1884, but was defeated. He died in Washington, D. C., Dec. 26, 1886.

LOGAN, MOUNT, a peak in the Alaskan Alps, said to be the second highest point in North America. Its altitude is 19,500 feet.

LOGANSPORT, a city and county-seat of Cass co., Ind.; at the confluence of the Wabash and Eel rivers; and on the Wabash, the Vandalia, and several other railroads; 100 miles S. E. of Chicago. It is the farming trade center for a region having a population of 100,000; it manufactures flour, paper, pumps, galvanized iron, linseed oil, carriages, and agricultural implements. It is the seat of the Northern Indiana Hospital for the Insane. Logansport has a large trade by rail in lumber, pork, and agricultural products. There are electric light and street railroad plants; an improved water system; several banks; daily, weekly and monthly periodicals. Pop. (1910) 19,050; (1920) 21,626.

LOGGING-STONE. See ROCKING-STONES.

LOGIC, as known in the present day, is a development and modification of the *techné dialektikē* = art of reasoning, which Aristotle, utilizing the labors of his predecessors, and notably those of Zeno of Elea, molded into something like consistent shape. The first development of Aristotelian logic was by the Scholastics. At the time of the Reformation, probably as a protest, Scholasticism was depreciated, and at some of the Scotch universities it was discarded for Ramism. The subtle distinctions and keen disputations of the Schoolmen led in the next century to Bacon's condemnation of the perversion—not of the cultivation—of logical pursuits. Locke was not so moderate, as may be seen in his "Essay."

Generally speaking, down to the first half of the 19th century there was little dispute as to how logic should be defined. The Port Royalists had certainly called it the Art of Thinking; but the Art or Science of Reasoning, or the Art and Science of Reasoning met with little opposition as a definition. This is how Whately defines it, and a writer of such opposite opinions as Tongiorgi, S. J., has substantially the same words; and a parallel passage to Whately's explanation as to how logic is at once a science and an art, occurs in Liberatore, who is read in many of the ecclesiastical colleges in Rome.

Deductive logic, syllogistic logic; in which no more is inferred in the conclusion than is implicitly contained in the premises.

Equational logic, a system of logical notation in which propositions are expressed in the form of equations.

Inductive logic, the science which treats of inductive reasoning, by which, broadly speaking, a general proposition is inferred from a number of particular propositions.

Modified logic, that logic which is concerned in the investigation of truth and its contradictory opposite error; of the causes of error, and the impediments to truth and their removal, and of the subsidiaries by which human thought may be strengthened and guided in its functions.

LOHENGRIN (lō'en-grin), the hero of an old High German poem, written in the end of the 13th century. He was the son of Parzival, and a knight of the Grail. At King Arthur's command he was taken by a swan through the air to Mainz, where he fought for Elsa, daughter of the Duke of Brabant, overthrew her persecutor, and married the lady. Then he accompanied the emperor to fight against the Hungarians, and subsequently warred against the Saracens. On his return home to Cologne, Elsa, contrary to his prohibition, persisted in asking him about his origin. After being asked a third time he told her, but was at the same time carried away by the swan back to the Grail. Rückert's edition (1857) of the poem is the best. The poem is a continuation of Wolfram von Eschenbach's "Parzival." Wagner made it the subject of his great opera, "Lohengrin" (1848).

LOIRE (lwär), the longest river in France, rising in the Cévennes, in the department of Ardèche, at an elevation of 4,511 feet, flowing in a N. and N. W. direction through the center of France as far as Orléans, where it bends round to the S. W. and continues on to Tours; thence following, in general, a W. course to its embouchure in the Bay of Biscay. It is tidal to Nantes, 35 miles from its mouth; entire length, 620 miles. It becomes navigable a little above Roanne, 550 miles from the sea. The Loire is notorious for the destructive inundations it causes, though the lower part of its course is protected by large dykes or *levès*, 20 feet high. The principal tributaries are the Nièvre and the Maine (which is formed by the Sarthe, its affluent the Loir, and the Mayenne) on the right; and the Allier, Cher, Indre, and Vienne, on the left. The Loire is canalized along considerable stretches of its course, and is connected with the Seine, the Saône, and the harbor of Brest by canals. Its valley is extremely fertile. Area of drainage basin, 44,450 square miles.

LOIRE, a department in the S. E. of France, formerly part of the province of Lyonnais and the county of Forez, comprises the arrondissements of Montbrison, Roanne, and St. Etienne, with St. Etienne for its capital; area, 1,852 square miles; pop. about 640,000. The mountains yield iron and lead, and the coalfields are the richest in France. Some 17,000 miners are employed, 25,000 in the iron industries, 12,000 in the silk, and 5,500 in the cotton industries. Woolens, linen, glass, paper, leather, etc., are likewise manufactured. Wine, fruit, fodder, and potatoes are the principal agricultural products. Timber and turpentine are yielded by the pine woods. Mineral springs abound, as at St. Galmier, St. Alban, etc.

LOIRE, HAUTE, a department of central France, formed out of the former province of Languedoc, the duchy of Auvergne, and the district of Forez, and bounded on the S. by Lozère and Ardèche. The Loire crosses it going N., the Allier going N. W.; area, 1,930 square miles; pop. about 303,000. The surface forms a plateau, deeply trenched by river courses; it ranges in elevation from 2,000 to 3,000 feet and rises in peaks and domes up to 5,755 feet above sea-level (Mount Méznec). In spite of the ungenerous nature of the soil, agriculture is the chief calling of the inhabitants. But about 120,000 persons find employment at home in making lace from wool, cotton, flax, silk, gold, and silver. Some thousands of the inhabitants leave their houses for a time every year, to work in other parts of France. Coal and building-stone are worked. Capital, Le Puy.

LOIRE-INFÉRIEURE (*ang-fā-ryur'*), a maritime department of the W. of France, formed out of the S. portion of the old province of Brittany, and comprising the arrondissements of Nantes, Ancenis, Paimbœuf, Châteaubriant, and St. Nazaire, with Nantes for its capital; area, 2,693 square miles; pop. 620,000. It has a coastline of 78 miles. The Loire flowing W. intersects it and forms a wide estuary; the Vilaine skirts its N. W. boundary. In the S. of the department lies the lake of Grand-Lieu, 26 square miles in extent. The interior is on the whole flat, and the soil fertile, producing cereals, potatoes, beet roots, hemp, and fodder. Bees are kept. There are fine oak and pine forests. Salt marshes are numerous along the shore. The vineyards yield annually about 30,000,000 gallons of wine, and the orchards some 4,500,000 gallons of cider. Granite, slate, and limestone are quarried. The industrial establishments include iron works, sugar refineries, glass works, factories for tinning fruits and sardines, etc. St. Nazaire has grown into an important seaport, having taken the place formerly occupied by Nantes. Shipbuilding is carried on at Nantes. The coast fisheries and general export trade are extensive.

LOIRET, a department of Central France, formed out of the old provinces of Orléannais and Berri, and comprising the arrondissements of Orléans, Montargis, Gien, and Pithiviers; on the N. loop of the Loire; area, 2,629 square miles; pop. about 364,000. The country is for the most part an elevated, fertile plain, producing corn and wine in abundance, except in the sandy district of Sologne, lying S. of Orleans, the chief town. Cattle, sheep, and bees are extensively reared. Pottery and porcelain, sugar, vinegar, and soap are the principal industrial products.

LOIR-ET-CHER (*lwär-ā-shār'*), a department of France, formed out of the old province of Orléannais, and comprising the arrondissements of Blois, Vendome, and Romorantin. The Loire flows through it S. W., almost bisecting it. The S. E. portion belongs to the infertile district of Sologne. The Loir crosses it parallel to the Loire farther to the N. W.; area, 2,478 square miles; pop. about 270,000. The department is almost a uniform plain. The chief products are corn, fruits, wine, beet root, and timber. Fish, poultry, and bees abound. Principal town, Blois.

LOLLARD, a name given to a religious association which arose at Antwerp about the beginning of the 14th century. By some, Walter Lollard, who was burnt alive at Cologne in 1322, is said to have been the founder, but it seems to have existed before his time. The members were unmarried men and widowers, who lived in community under a chief, reserving to themselves, however, the right of returning to their former mode of life. In 1472 the Pope constituted them a religious order. In 1506 Julius II. increased their privileges. They continued to the French Revolution. The name, having become one of contempt, was applied to the followers of Wyclif, and especially to the poor preachers whom he sent out. While Richard II. reigned, the persecution of the Lollards was not heartily favored by the court, and in 1395 they presented a petition to Parliament for the reform of the Church. But on the accession of the House of Lancaster in 1399 a change for the worse took place. The clergy had assisted Henry IV. to the throne, in return for which he followed their directions as to the Lollards, and the Act *de hæretico comburendo* was passed as 2 Henry IV., c. 15. The first Lollard martyr was William Sautre, who was burnt in London, Feb. 12, 1401. The second was Thomas Badby, a mechanic in the diocese of Worcester, who was burnt in 1409 or 1410. Henry V., who carried out the ecclesiastical policy of his father, became king in 1413. On Sept. 25 of the same year Sir John Oldcastle (Lord Cobham), who had edited the works of Wyclif, was adjudged to be "a most pernicious and detestable heretic." Early in 1414 a conspiracy of Lollards under the leadership of Lord Cobham was alleged to have been detected, and he was committed to the Tower of London, but escaped into Wales. Being recaptured, he was put to death by cruel torture in St. Giles' Fields, London, on Dec. 25, 1418.

LOMBARD, PETER, a French philosopher; born about the beginning of the 12th century, at a village near Novara, in Lombardy. He was educated at Bologna, and came to France with recommendations to Bernard of Clairvaux. His uncommon talents soon procured him a chair of theology in Paris. In 1159 he was appointed Bishop of Paris, but he died in the following year. He was very generally styled *Magister Sententiarum*, or the "Master of Sentences," from his work "Four Books of Sentences," an arranged collection of sentences from Augustine and other fathers, on points of Christian doctrine. A subtle heresy, "Nihilism," was detected by some in Peter's teaching, and the theo-

logical doctors of Paris in 1300 denounced it in 16 propositions culled from his writings. Peter Lombard's work was the subject of many commentaries down to the time of the Reformation.

LOMBARD COLLEGE, a coeducational institution in Galesburg, Ill.; founded in 1851 under the auspices of the Universalist Church; reported at the close of 1919: Professors and instructors, 20; students, 250; president, J. M. Tilden, LL. D.

LOMBARDS, a people of Germanic descent, who were called by the Latin writers Longobardi or, more correctly, Langobardi, a name which is differently derived by different authorities. The people so designated first appear in history as settled about the Lower Elbe, in Hanover and western Prussia, at the dawn of the Christian era. In the two centuries that followed they came more than once into conflict with the Romans. About 455 the Longobardi were settled in Moravia, and were tributary to the Herulians. The oppression of these masters stung them into revolt; they subdued the Herulians, and after them the Gepidæ, and established themselves as the ruling race in Pannonia. Under Albion, their king, they invaded Italy in 568, and possessed themselves of the greater part of northern and central Italy, Pavia being the last city to submit. They subsequently extended their power as far S. as Spoleto and Benevento, both of which duchies were held by Lombard dukes. His second successor, Authari, assumed the Roman title of Flavius, and under the influence of his queen, Theodelinda, a Frankish princess, the nation began to change its Arian faith for the Catholic. The Longobardi, though never a numerous race, were distinguished for love of war, but in Italy they became more civilized, adopted the Latin language, began to build churches and found monasteries, and gradually became assimilated with the Italians. King Rothari in 643, and his successors, embodied the legal customs of the Lombards in a code, "*Leges Longobardorum.*" Liutprand, king from 712 to 744, made an unsuccessful attempt to subdue all Italy. His strongest opponent was the Pope, who summoned the Franks to his assistance. Charlemagne in 774 overthrew the Lombard dynasty, and had himself crowned King of the Franks and the Lombards; and henceforward the Lombards were entirely merged in the Italians. No traces of their language remain. Their earliest historian whose works survive, Paul the Deacon, wrote in Latin.

LOMBARDY, that part of Upper Italy which lies between the Alps and the Po, having the territory of Venice on the E., and Piedmont on the W. Its history begins with the conquest by the Romans in 222, who called it Gallia Cisalpina. After the break-up of the Roman empire it was successively in the hands of Odoacer, the Ostrogoths, the Byzantine emperors, and the Lombards. Charlemagne incorporated it in his empire, but from 843 it was ruled by a separate line of kings, though before the kingdom ended (961) it had broken up into a number of independent duchies and civic republics. The Lombard cities grew wealthy by industry and trade. They resisted sturdily and successfully the attempts of the Emperors Frederick I. and II. to curtail their liberties, forming themselves into strong leagues, which were powerful enough to rout the emperors in pitched battles. But they were torn by internal dissension. After the death (1447) of the last Duke of Milan, whose ancestor, Count Azzo, had acquired the sovereignty over nearly all Lombardy in 1337, the country was made an object of contention between the King of France and the emperor. The last-named having got the better in the contest, Lombardy passed through Charles V. to Spain, which held possession of it till 1713, when the duchies of Milan and Mantua came into the hands of Austria, and were designated "Austrian Lombardy." Napoleon made it a part of the Cisalpine republic, the Transpadane republic, and the kingdom of Italy successively. But in 1815 it was restored to Austria, and annexed politically to the newly-acquired Venetian territory under the name of the Lombardo-Venetian Kingdom. This union was dissolved in 1859, when Lombardy was given up to the new kingdom of Italy, which divided it into the provinces of Bergamo, Brescia, Como, Cremona, Mantua, Milan, Pavia, and Sondrio. Pop. about 5,000,000.

LOMBOK, an island, belonging to the Dutch, in the Indian Archipelago; between Bali on the W. and Sunbawa on the E.; area, 2,393 square miles. Between the two ranges which traverse the island, one of them rising to the height of 11,500 feet there is a plain fertile in rice, cotton, maize, coffee, and tobacco. There are several active volcanoes. The fauna and flora have strong Australian affinities, Lombok being E. of Wallace's Line. The ruling class are Brahmans, but the mass of the population is Mohammedan. The capital is Mataram on the W. coast. Pop. estimated at about 375,000.